PUBLIC UTILITY REGULATORY POLICIES ACT AMENDMENTS

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY REGULATION

OF THE

COMMITTEE ON

ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

ON

Amendment No. 1452 to S. 1885

A BILL TO AMEND THE FEDERAL POWER ACT AND THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978 TO PLACE ELECTRIC UTILITIES, INCLUDING MEMBERS OF REGISTERED HOLDING COMPANY SYSTEMS, ON THE SAME BASIS AS NONUTILITIES WITH RESPECT TO ENCOURAGING THEIR INVESTMENT IN COGENERATION AND SMALL POWER PRODUCTION FACILITIES, AND FOR OTHER PURPOSES

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PUBLIC UTILITY REGULATORY POLICIES ACT AMENDMENTS

MONDAY, MAY 24, 1982

U.S. SENATE,
SUBCOMMITTEE ON ENERGY REGULATION,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 3110, Dirksen Office Building, Hon. Gordon J. Humphrey, presiding.

Present: Senators Humphrey and Nickles.

Also present: Dan Freihofer, professional staff member.

OPENING STATEMENT OF HON. GORDON J. HUMPHREY, A U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator HUMPHREY. Good morning. The subcommittee meets this morning to receive testimony on the amendment No. 1452 to S. 1885, a bill to amend the Public Utility Regulatory Policies Act of 1978.

Before proceeding with today's testimony, I would like to briefly review the basic elements of this substitute amendment. Sections 1 and 2 address the issue of utility ownership of "qualifying facilities" as defined in sections 201 and 210 of PURPA. Under present law, the FERC has ruled that electric utilities—or their subsidiaries—are not allowed to own more than 50-percent equity interest in "qualifying" cogeneration and small power production facilities. My amendment would statutorily remove the utility ownership limitation for qualifying cogeneration facilities, but provides that any State may establish ownership limitations different from those in Federal law.

Sections 3 and 4 of the amendment address two legal questions raised in a recent decision of the U.S. District Court of Appeals. In the *American Electric Power ("AEP")* case, the court vacated and remanded two major regulations issued under section 210 of PURPA: The full avoided cost rule and the rule mandating interconnection between utilities and qualifying facilities. My amendment is intended to codify and thereby revalidate these two regulations, the State again being given greater flexibility and authority to: (1) Establish power purchase rates different from the full avoided cost, and (2) to arbitrate the terms and conditions of an interconnection order.

In my view, section 210 of PURPA is too important a program to leave floundering in the courts and the FERC for another 2 or more years; 34 States have now issued final or proposed rules implementing section 210. Several States, including New Hampshire, have enacted separate mini-PURPA's of their own, and these too have been challenged in court as a result of the *AEP* case.

My central objectives in drafting this amendment, then, are to restore marketplace confidence in PURPA, to return to the States the authority to tailor their implementation of section 210 to individual State circumstances, and to cause a minimum of disruption and delay in the State implementation process. Again, I do not believe it will suffice for Congress to await the outcome of further appeals in the *AEP* case.

It is with a spirit of cooperation and good faith, then, that I will ask each of you how this legislation might be improved to achieve these underlying objectives. I appreciate your willingness to appear before the subcommittee on such short notice, and I would like to establish the groundrule that each of you summarize your oral comments in no more than 5 to 7 minutes. As usual, all written testimony will appear in the hearing record.

[The text of amendment No. 1452 to S. 1885 follows:]

AMENDMENT NO. 1452

Purpose: Amendment in the nature of a substitute for S. 1885, to clarify incentives provided for small power production and cogeneration.

IN THE SENATE OF THE UNITED STATES—97th Cong., 2d Sess.

S. 1885

To amend the Federal Power and Public Utility Regulatory Policies Act of 1978 to place electric utilities, including members of registered holding company systems, on the same basis as nonutilities with respect to encouraging their investment in cogeneration and small power production facilities and for other purposes.

May 18 (legislative day, May 11), 1982

Referred to the Committee on Energy and Natural Resources and ordered to be printed

AMENDMENT intended to be proposed by Mr. HUMPHREY

Viz: Strike all after the enacting clause and insert in lieu thereof the following:

QUALIFYING COGENERATORS

SECTION 1. (a) DEFINITION OF QUALIFYING COGENERATORS.—Section 3(18)(B) of the Federal Power Act is amended to read as follows:

"(B) 'qualifying cogeneration facility' means a cogeneration facility which the Commission determines, by rule, meets such requirements (including requirements respecting minimum size, fuel use, and fuel efficiency) as the Commission may, by rule, prescribe.".

(b) STATE AUTHORITY TO LIMIT UTILITY OWNERSHIP.—Section 210 of the Public Utility Regulatory Policies Act of 1978 is amended by inserting a new subsection (k) to read as follows:

"(k) Nothing in this Act shall preclude a State agency from exercising authority to establish limitations on ownership of qualifying cogeneration or small power production facilities by persons primarily engaged in the generation or sale of electric power (other than electric power solely from cogeneration facilities or small power production facilities).".

AMENDMENT TO PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978

SEC. 2. Section 210(e)(1) of the Public Utility Regulatory Policies Act of 1978 is amended by inserting after "qualifying small power production facilities" the following: "or any investment or acquisition of any other interest therein".

RATES FOR PURCHASE

SEC. 3. Section 210(b) of the Public Utility Regulatory Policies Act of 1978 is amended to read as follows:

"(b)(1) RATES FOR PURCHASES BY ELECTRIC UTILITIES.—The rate for the purchase under subsection (a) of electricity from any qualifying facility shall be the incremental cost of alternative electric energy of such purchasing electric utility, unless a State agency, or a nonregulated electric utility, establishes a different rate of prospective application for such purchase sufficient to encourage cogeneration and small power production and consistent with the public interest and the interests of consumers of the electric utility.

"(2) Nothing in this section—

"(A) affects the validity of any contract, or

"(B) limits the authority of an electric utility and qualifying facility to enter into a contract which contains provisions which differ from those provided by this section and by rules prescribed by the Commission under this section.".

INTERCONNECTION AUTHORITY

SEC. 4. (a) Subsection (a) of section 210 of the Public Utility Regulatory Policies Act of 1978 is amended:

(1) in paragraph (1), by striking out "and" and inserting in lieu thereof ";";

(2) in paragraph (2), by striking out the period and inserting in lieu thereof "; and"; and

(3) by adding after paragraph (2) the following:

"(3) interconnect with such facilities.".

(b) Section 210 of such Act is amended by adding at the end thereof a new subsection (l) as follows:

"(l) ARRANGEMENTS FOR INTERCONNECTION.—The rules under subsection (a) shall insure that, in requiring any electric utility to offer to interconnect with a qualifying facility, the arrangements for such interconnection provide that—

"(1) the qualifying facility be obligated to pay any reasonable interconnection costs incurred by the utility;

"(2) such interconnection may relate to any of the matters referred to in subparagraphs (A) through (D) of section 210(a)(1) of the Federal Power Act; and

"(3) if the electric utility and qualifying facility are unable to resolve disputes concerning interconnection arrangements, the State agency may prescribe the terms respecting such interconnection, including the costs to be borne by the qualifying facility on a nondiscriminatory basis. If any State agency notifies the Commission that it declines to perform this function, the Commission shall, upon application, prescribe reasonable terms for such arrangements.".

(c) Section 210(e)(3) of the Act is amended:

(1) in subparagraph (A) by striking "," and inserting ", and";

(2) by striking subparagraph (B); and

(3) by redesignating subparagraph (C) as subparagraph (B):

Senator HUMPHREY. The first panel this morning are members of the Edison Electric Institute. Mr. Fred Webber, executive vice president of EEI; Mr. Ed Berlin, counsel, American Electric Power Corp.; Mr. Peter Garam, assistant general counsel, Consolidated Edison Co. of New York; and Dr. Glenn Bjorklund, vice president for system planning, Southern California Edison.

Good morning, gentlemen. Why don't we start from your right, Mr. Webber?

STATEMENT OF FREDERICK L. WEBBER, EXECUTIVE VICE PRESIDENT, EDISON ELECTRIC INSTITUTE

Mr. WEBBER. Good morning, Mr. Chairman. I thank you for giving us this opportunity to comment on S. 1885 and comment on your amendment.

You've already introduced the panel, so let me adhere to the 5-minute rule. I'm not going to follow my testimony, but follow an outline to that testimony, and just make some points for the sake of emphasis and then defer to the panel.

We support the development of cogeneration and small power production wherever it will reduce the Nation's dependence on scarce oil and natural gas. We believe that the proposed amendments to S. 1885 are counter-productive to our Nation's energy goals and injurious to the electric utility industry's ability to continue to provide low cost and reliable electric service to our customers and your constituents.

We oppose the amendments to S. 1885 based on our belief that costs to consumers, customers of electric utilities, will be increased and we think we can document that, and reliability reduced. I will briefly describe some of our concerns.

We believe that electric utilities should have equal competitive ownership opportunities with all others for the development of cogeneration in small power production facilities. These proposed amendments do not provide this equal competitive ownership opportunity because they allow States to set any limit that they wish on the percentage qualifying cogeneration facilities owned by electric utilities, even below the current 50-percent limitation. At least that is our interpretation.

Ability of State regulators to limit ownership will make the organization and financing for utility or jointly owned projects difficult and uncertain. This is contrary to congressional objectives of promoting the development of cogeneration in small power production. We do not think that it is appropriate to adopt a different approach for utility ownership when cogeneration is compared to utility ownership of small power production facilities, as is proposed in these amendments.

We believe that these amendments will reduce competition and the development of qualifying facilities and we urge adoption of S. 1885 as originally introduced by you.

EEI believes that the economic benefits of cogeneration and small power production should be shared with utility ratepayers in order to properly balance the interest of qualifying facility owners and ratepayers as currently provided in section 210 of PURPA. Rates for purchase from qualifying facilities should be just and reasonable, nondiscriminatory, and less than the utility's true avoided cost in order to provide a benefit to ratepayers.

Proposed amendments to S. 1885 allow State agencies to establish a rate for purchase from qualifying facilities which is higher than a utility's true avoided cost. We believe that such an approach amounts to a ratepayer subsidy of qualifying facility developments. Therefore, we vigorously oppose the proposed amendments dealing with rates for purchase from qualifying facilities.

Concerning interconnection authority, let me say the following. The proposed amendments require mandatory interconnection on the part of utilities with qualifying facilities. Proposed amendments do not address any consideration for the need to protect the safety and reliability of the electric grid as well as the public interest. The proposed amendments would not protect electric utilities currently not subject to FERC jurisdiction from jurisdictional consequences which might flow from a required interconnection with a qualifying facility.

The industrial electric utility industry believes that these safeguards found in sections 210 and 212 of the Federal Power Act are important to the maintenance of safe and reliable electric service and again we're prepared to document that.

Thus we oppose the proposed amendments to S. 1885 dealing with interconnection authority.

In summary, the issues which I have discussed are complex. They are very important to the electric utility industry, and more specifically to the ratepayers, to the consumers. We believe that the proposed amendments will limit the development of cogeneration and small power production technologies. We believe they could lead to higher cost to consumers and we believe they could reduce reliability of electric supplies.

Therefore, we strongly oppose the amendments to S. 1885. We consider them contrary to the interest of consumers and the national interest and full development of cogeneration of small power production facilities.

I've given a brief overview, Mr. Chairman. I'd like to turn now to the other three members of the panel and we'll be ready for questions and answers if that's appropriate.

[The prepared statement of Mr. Webber follows:]

STATEMENT BY EDISON ELECTRIC INSTITUTE

Comments on Proposed Amendment to S.1885 - Legislation to Provide Electric Utilities Equal Competitive Ownership Opportunities with Respect to Cogeneration and Small Power Production.

Presented by

Frederick L. Webber
Executive Vice President
Edison Electric Institute

May 24, 1982

Before the Subcommittee on Energy Regulation of the Senate Committee on Energy and Natural Resources

STATEMENT BY EDISON ELECTRIC INSTITUTE

I. Overview

Mr. Chairman and members of the Committee, I appreciate the opportunity to appear before you to discuss the subject of cogeneration and small power production and, in particular, the proposed amendment to S.1885. I am Frederick L. Webber, Executive Vice President of Edison Electric Institute, the association of investor-owned electric utility companies. EEI member companies provide 77 percent of all electricity generated in the nation. I am accompanied here today by Edward Berlin, a partner in the law firm of Leva, Hawes, Symington, Martin and Oppenheimer, who is representing American Electric Power Service Corporation and who has been the company's lead counsel in the current court proceedings on these issues; Peter Garam, Assistant General Counsel for Consolidated Edison Company of New York; and Glenn Bjorklund, Vice President of System Planning for Southern California Edison Company.

Cogeneration and small power production technologies have a potentially important and beneficial role in our nation's energy future. EEI supports the development of cogeneration and small power production wherever it will reduce the nation's dependence on scarce oil and natural gas. However, EEI believes that the proposed amendment to S.1885 is counter productive to our nation's energy goals, and injurious to the electric utility industry's ability to continue to provide low-cost and reliable electric service to customers. We oppose the S.1885 amendment based on our belief that costs to customers of electric utilities could be increased, reliability of the electric utility grid reduced, and full development of cogeneration and small power production inhibited.

In the remainder of my statement today, I will briefly describe some of EEI's concerns with the proposed amendment. Details on these issues will be provided by the other panel members.

II. Definition of Qualifying Facilities

EEI believes that electric utilities should have equal competitive ownership opportunities with all others for the development of cogeneration and small power production facilities. The proposed amendment does not provide this equal competitive ownership opportunity because proposed Section 1(b) allows states to set any limit they wish on the percentage of qualifying cogeneration facilities owned by electric utilities. In fact, the amendment represents a retrenchment of existing policy which allows electric utilities to own up to a 50 percent interest in qualifying facilities. The amendment would not preclude states from setting utility ownership limitations below the current 50 percent limit -- or even from prohibiting electric utility participation altogether.

EEI believes that authorizing state regulators to limit utility ownership will make the organization and financing for utility-owned, or jointly-owned projects difficult and uncertain, and will effectively preclude utility participation in cogeneration and small power production development. This is contrary to the Congressional objectives of promoting the full development of cogeneration and small power production technologies.

The proposed amendment also adopts a different approach for utility ownership of cogeneration as compared to utility ownership of small power production facilities. We do not believe that this differentiation is necessary or appropriate.

The overall result of the proposed amendment would be to reduce competition in the development of qualifying facilities, and to preclude the full development of these technologies contrary to the national interest. Thus, we oppose the proposed amendment's handling of the definition of qualifying facilities and urge adoption of S.1885 as originally introduced.

III. Rates for Purchase from Qualifying Facilities

EEI believes that the economic benefits of cogeneration and small power production should be shared with utility ratepayers in order to properly balance the public interest, the interest of qualifying facility owners, and the interest of ratepayers as currently provided for in Section 210 of PURPA. In order to properly balance these interests, rates for purchase from qualifying facilities should be just and reasonable, nondiscriminatory, and at less than the utility's true avoided cost.

The proposed amendment to S.1885 would require that the rate for purchases by electric utilities be set at the incremental cost of alternative electric energy for such purchasing electric utility - *i.e.*, one hundred percent of true avoided cost. We do not believe that one hundred percent of true avoided cost balances the interests of the public, ratepayers, and qualifying facility developers.

Furthermore, the proposed amendment allows state agencies to establish a rate for purchase from qualifying facilities which is higher than a utility's true avoided cost. We believe that such approach amounts to a ratepayer subsidy of qualifying facility developers. Therefore, we oppose the proposed amendment's approach on rates for purchases from qualifying facilities.

IV. Interconnection Authority

EEI strongly opposes the inclusion of the S. 1885 amendment's interconnection provisions. The proposed amendment would require mandatory interconnection on the part of electric utilities with qualifying facilities, and does not address any consideration of the need to protect the safety and reliability of the electric grid, as well as the public interest. Additionally, the proposed amendment would not protect electric utilities currently not subject to FERC jurisdiction from jurisdictional consequences which might flow from a required interconnection with a qualifying facility.

EEI believes that these safeguards, found in Sections 210 and 212 of the Federal Power Act, are important to the maintenance of safe and reliable electric service. If adopted, the proposed amendment could reduce the quality of service currently provided by the electric utility industry to its customers. Thus, we oppose adoption of the proposed amendment to S.1885.

V. Summary

The issues which I have briefly discussed are complex and very important to the electric utility industry and its ratepayers. We believe that the proposed amendment will limit the development of cogeneration and small power production technologies, and could lead to higher costs to consumers and reduced reliability of electric supply. Therefore, EEI strongly opposes the amendment to S.1885 as contrary to the interest of consumers, and the national interest in full development of cogeneration and small power production facilities to reduce our reliance on scarce supplies of oil and natural gas.

I would now like to turn to the panel of individual electric utility company representatives for further elaboration on these issues.

STATEMENT OF EDWARD BERLIN, COUNSEL, AMERICAN ELECTRIC POWER SERVICE CORP.

Mr. BERLIN. Good morning, Senator Humphrey, on behalf of American Electric Power Utility which you recognize has had a long and active involvement on the cogeneration issue, I appreciate the opportunity to share with you our concerns, and we do indeed have concerns with respect to the amendments to S. 1885. We urge that you not go forward with them in their present form.

I should say at the outset that we do not wish to stand in the way of beneficial cogeneration. We support it fully. But as Congress well recognized when it enacted PURPA, there is a considerable potential that cogeneration could work significant prejudice to utility consumers unless the program is carried out in a balanced way.

Because we view the FERC's initial effort to implement cogeneration as being highly prejudicial to utility consumers, we felt obliged to bring a litigation. But please understand, Senator, that the debate before you today is not a debate between utilities and cogenerators. The debate truly is one between utility consumers and cogenerators.

If we adopt interconnection rules which ignore the very serious reliability and implications that could arise, it would be utility consumers that would be injured. If we require subsidies to cogenerators, there will be utility consumers who will be forced to pay those subsidies. Congress was aware of this, and for that reason it mandated FERC to carry out a fairly delicate balance.

The Commission's response was to ignore that balance. And because of that we felt obliged to challenge the Commission's response in the court of appeals. We pointed out to the court of appeals that in fact the Commission's 100 percent avoided cost rule would in fact substantially prejudice utility consumers and we cited very specific examples, and the Court of Appeals agreed that those examples would indeed be prejudicial to utility consumers.

Regrettably, Senator, the legislation in its present form would present many of those same prejudicial difficulties. It would deny any share of the benefits of cogeneration to utility consumers and in all likelihood would require that they pay subsidies to cogeneration.

PURPA, it must be remembered, was not an effort by Congress to extend the reach of Federal regulation to embrace cogeneration. It's quite the contrary. But for the enactment of the cogeneration provisions in PURPA, cogenerators would have been subject to the full reach of Federal jurisdiction and indeed the State jurisdiction.

Congress was mindful of the fact that that was having an inhibiting effect on cogeneration and it therefore responded by giving the FERC the authority to remove those regulatory barriers. But it recognized that in doing so it was appropriate to preserve some of the benefits for utility consumers. It was appropriate to make certain that they would not suffer any impairment of reliability. We're in the present dilemma, Senator, because the FERC declined to carry out that balance. Declined, if you will, to carry out the intent of Congress. That balance is no less important today than it was in 1978.

We suggest to you, therefore, that you must recognize the propriety of sharing the benefits of cogeneration, not only with cogenerators but with utility consumers.

The present statutory scheme contemplates that that balancing will take place. If, however, Congress is of the mind to abort that balancing procedure, if it is necessary in the judgment of Congress to legislate a specific percentage presumption, then we respectfully suggest that it not be set at 100 percent. That Congress continue to recognize that it is appropriate to provide some of the benefits of cogeneration to utility consumers and therefore is a presumptive target is to be set, that it certainly not be set at over 90 percent of clearly identifiable avoided costs. Of costs that truly will be avoided by the utility if they purchase the output of a cogenerator.

No cogenerator has ever come forward, to the best of my knowledge, and established to anyone's satisfaction that a 90 percent avoided cost rule would not be satisfactory to bring forth most if not all of the beneficial forms of cogeneration. You simply have no record before you, Senator, which should cause you to presumptively establish a rule which says to utility consumers, we are not going to provide at the outset even a minimal sharing in your favor.

With respect to the interconnection provision, we certainly are entirely sympathetic with your objective. The Commission, you will recall, made interconnection automatic. We challenged that in court. The court said it may not make it automatic, that to do so would ignore the congressional concern that interest of utility consumers in a reliable integrated network not be prejudiced. But the court also recognized, as we urged, that it was not necessary in order to carry out that congressional goal of insuring that the integrated network not suffer an impairment of reliability. It was not necessary to subject cogenerators to the full rigors of the interconnection provision of the Federal Power Act.

We urged the court, and the court suggested in its opinion, FERC, you should consider the establishment of streamlined procedures.

Senator, the Commission has yet to try to do that. You have not yet been shown that it is not possible for the FERC recognizing the legitimate interest of cogenerators to avoid excessive Federal regulation, and the equally compelling interest of utility consumers that their utility networks not be impaired to come up with a streamlined procedure that accommodates both legitimate interests.

The FERC has never endeavored to do what the court said it can do, and therefore we respectfully suggest to you that while we are entirely sympathetic with your objective, legislation is premature. If, nevertheless, the Congress is determined to go forward with an interconnection amendment patterned after the one that you have in your substitute amendment, then we respectfully suggest that you at a minimum make two modifications. That you recognize not only that costs must be considered by the States as they implement FERC guidelines, but that they also be required to consider fully the reliability implications of any proposed interconnection. And because reliability affects the entire integrated network because reliability problems cannot stop at State borders, that you provide an opportunity for utilities in very limited circumstances to seek discretionary review of the FERC should a utility be convinced that a State interconnection order would be in derogation of the reliability of the integrated network.

Thank you.

[The prepared statement of Mr. Berlin follows:]

STATEMENT ON BEHALF OF
AMERICAN ELECTRIC POWER SERVICE CORPORATION
BEFORE THE SENATE ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON ENERGY REGULATION

PRESENTED BY EDWARD BERLIN
OF LEVA, HAWES, SYMINGTON, MARTIN & OPPENHEIMER

MAY 24, 1982

Mr. Chairman, I am Edward Berlin, a partner in the law firm of Leva, Hawes, Symington, Martin & Oppenheimer, of Washington, D. C. I am here today on behalf of American Electric Power Service Corporation. Thank you for the opportunity to address the Subcommittee regarding the substitute for S.1885.

The substitute would amend Section 210 of the Public Utility Regulatory Policies Act ("PURPA") which created a federal program to encourage cogeneration and small power production by removing barriers to their use. The substitute would also amend certain related sections of the Federal Power Act.

With all due respect, I must urge the adoption of different provisions from some of those in the substitute bill. As I will explain in this testimony, the substitute bill would undo PURPA's basic structure before that structure has even been implemented. And, most significantly, it would do so by causing utility ratepayers -- that is, individuals, businesses and other users of electric energy -- to pay higher rates for their power so that cogenerators can receive higher payments from utilities.

PURPA, including Section 210, was enacted in 1978 to further three fundamental goals: to reduce the nation's excessive reliance on foreign oil, to increase energy efficiency, and to encourage just and equitable utility rates for consumers. The Congress believed that cogeneration and small power production had the potential of serving these fundamental goals, and to tap this potential Congress eliminated two institutional barriers believed to be impeding the development of otherwise justified cogeneration projects: first, by requiring utilities both to buy a cogenerator's or small power producer's excess power and to sell the cogenerator or small power producer any additional power it needs, each at rates that are "just and reasonable" to both cogenerators and other utility customers; and, second, by providing that the regulation of cogenerators and small power producers be less extensive than the regulation of utilities.

In Section 210 of PURPA, Congress directed the FERC to issue rules under which the States were to set rates for the purchase of electricity by utilities from cogenerators and small power producers, and for the sale of electricity by utilities to such facilities. That Section directed that the FERC strike a balance, to protect both the interests of cogenerators and the interests of utility ratepayers in "just and reasonable" rates.

American Electric Power Service Corporation, Consolidated Edison Company of New York, and Colorado-Ute Electric Association challenged several aspects of the rules the FERC promulgated under these provisions. On January 22 of this year, the United States Court of Appeals for the D. C. Circuit handed down its decision, reversing two aspects of the FERC's rules. The centerpiece of the Court's decision concerned the FERC's rule requiring the States to set the rate for a utility's purchase of electricity from a qualifying facility at 100 per cent of the utility's incremental, or "full avoided cost," thereby depriving utility ratepayers of every penny of the economic benefits resulting from cogeneration and small power production. The Court struck this rule, holding that it eviscerated PURPA's balance between ratepayers and cogenerators, and that the FERC, at a minimum, had not adequately explained and supported such a one-sided rule. The Court also held that the FERC's rule exempting all qualifying facilities from the interconnection provisions of the Federal Power Act violated the congressional directive in Section 210 of PURPA that qualifying facilities not be exempted from those provisions.

The substitute for S.1885 seeks to overturn the Court's holding on these two aspects of the Commission's rules. For the reasons set forth below, we believe that the "avoided cost" proposal is unwarranted. We believe that Section 210 of PURPA as currently written and as correctly interpeted by the Court sets out the proper standard for a rule pursuant to which the States should set purchase rates. If the Congress is to set the purchase rate, a percentage of avoided cost that gives utility ratepayers a share in the benefits of the purchase rate transaction would best further the objectives of PURPA. While we believe that the Court correctly decided the interconnection questions, we believe some changes in the existing statutory scheme would be appropriate. As explained below, however, the substitute's interconnection provisions contain serious shortcomings.

Purchase Rates

Section 210 of PURPA requires the FERC to issue rules that assure that the rates for a utility's purchase of electricity from a qualifying facility are "just and reasonable to the electric consumers of the electric utility," "in the public interest," and do "not discriminate against" qualifying facilities. This statutory standard requires the FERC to balance the interests of the owners of the qualifying facilities and the interests of the utilities' ratepayers. A full avoided cost rule denies to the utilities' customers any share in the benefits that would otherwise exist from reducing the need for utility-generated electricity. As the Court of Appeals held in the AEP case, such a rule "seems entirely inconsistent with the clear intent of section 210(b)," to balance the interests of ratepayer and cogenerator.

The Court remanded the purchase rate rule back to the Commission, directing the Commission to balance these interests and not merely to give lip service to the statutory standard.

Abandonment of the requirement that the FERC balance the interests before a balancing has even been tried is, we believe, unwarranted and unwise.

There are those who suggest that a 100% full avoided cost rule represents a perfect balancing of interests and that it should be adopted as the presumptive statutory rule. The argument is that ratepayers would not be required to pay any more for a qualifying facility's power under the full avoided cost rule than the utility itself would charge for the same increment of power.

First, there are many situations where the ratepayers actually will be made worse off by a full avoided cost rule. For example, where the utility is subject to higher pollution control standards than are cogenerators or where the utility pays higher taxes than cogenerators, rates at full avoided cost subsidize the cogenerators' excess pollution and reduced share of the tax burden because those pollution control costs and taxes constitute part of the full avoided cost paid to cogenerators. Similarly, when a utility has excess capacity, the full avoided cost rule will cause higher utility rates for each remaining customer, even though the utility's total costs are not increased. And, by requiring utilities to pay more for power than the rates that would have been set or negotiated but for this one-sided rule, the rule increases utility costs to the detriment of its non-cogenerating customers.

Second, the very existence of a federal program that mandates the removal of both federal and state barriers to cogeneration and small power production can only be justified if the program serves some important national interests. Among the interests section 210 was intended to serve was to encourage just and equitable utility rates. Arbitrarily assigning all the benefits from a transaction between a utility and qualifying facility to the qualifying facility, and none to the utility's ratepayers, does not foster the national interest in just and reasonable rates. Instead, it directly prejudices ratepayers to aid cogenerators.

Indeed, permitting the States to set purchase rates at greater than 100% of full avoided cost, as the substitute would apparently allow, would undercut this fundamental rationale for the federal program. This is not a mere theoretical problem. As noted by J. Hunter Chiles, III, Director of the Office of Policy, Planning and Analysis, Department of Energy, in his testimony before this Subcommittee on April 19, 1982, a few States have established rates higher than 100% of full avoided cost.

> "The effect of such high rates is, in essence, to subsidize the QF, raise consumer rates, and cause less economical generating sources to displace more economical sources."

He went on to note that such high rates would undercut the fundamental purpose of a federal program to encourage cogeneration and small power production.

> "[W]e see the potential for relatively less economical oil or natural gas cogeneration to replace more economical sources powered with abundant domestic resources, such as coal-fired central station plants."

Why have a federal program mandating the States to take action unless there is some assurance that the goals of the federal program will be furthered, and not undercut?

The substitute is an improvement over the FERC's purchase rate rule, because it gives the States the freedom to set a rate at less than 100%, as long as that rate is "sufficient to encourage cogeneration and small power production" and is "consistent with the public interest and the interests of consumers of the electric utility." We support the concept that, within appropriate limits, the States should be granted the authority to tailor their implementation of Section 210 to individual State circumstances. We think it totally inappropriate, however, to set the presumptive rate at 100% of full avoided cost. As discussed above, such a rate ignores the balance between the interests of the qualifying facility and the utility's customers that should be considered in setting a rate. Our suggestion is a modest, but absolutely fundamental, one -- that the presumptive rate be set at 90% of full avoided cost, with the States free to lower that rate under the same conditions specified in the substitute.

Furthermore, some States have labelled as "avoided costs" costs which the utility does not actually "avoid" when it buys power from cogenerators. For this reason the statute should be made clear that those rates are to be based upon actual, "clearly identifiable" avoided costs.

Let there be no mistake. We believe that the current statute embodies the proper standard -- that the interests of the utility's customers and the qualifying facility be balanced. We do not believe that a legislative short-circuiting of the rulemaking process is at all necessary. But if there is to be a legislative resolution, then the proposal I have just outlined is far preferable to the substitute for S.1885. Our proposal incorporates a balance of the interests, and like the substitute it would assure a minimum of disruption and delay in the State implementation process.

Interconnection

While, in our judgment, the Court of Appeals correctly interpreted the law on the interconnection issue, limited modification of the statutory provisions, though by no means essential to effectuate Congressional intent, may be approprite.

The approach we favor has many similarities with the approach of the substitute bill. We believe it to be appropriate to amend Section 210(a) to allow the FERC to issue rules respecting interconnections, and to amend Section 210(b) to provide that the rules under Section 210(a) shall insure that the qualifying facility pay any reasonable interconnection costs incurred by the utility.

By the phrase "reasonable interconnection costs," we assume that the substitute means the reasonable costs of making an interconnection that protects the safety and reliability of the utility system. We believe that the need to assure that the reliability and safety of utility systems are protected is sufficiently important to merit explicit legislative recognition, similar to that now included in Sections 210 and 212 of the Federal Power Act. Moreover, there may be cases where there simply is no means available to protect safety and reliability at any cost (without reconstructing the entire distribution system), and in these unusual cases the statute should be clear that interconnections are not to be made. We believe that there must be an opportunity for the FERC to take direct responsibility for passing on the terms of an interconnection in appropriate cases. Most interconnections between utilities and qualifying facilities will be routine and not call for specific resolution by the FERC. However, interconnections can affect the integrity of the highly complex national (and international) network of electricity grids. The reliability, integrity and safety of this network is clearly a federal interest and responsibility. Unless an opportunity for the Commission to take an active role with respect to interconnections that affect the integrity of this interstate network is preserved, an essential federal responsibility will have been abdicated. Moreover, there is no reason why the Commission's role need be cumbersome. AEP believes that clearly giving the Commission a discreticnary authority to review interconnections would be adequate to protect the vital national interest in a reliable electric system without unnecessarily burdening qualifying facilities.

Fuel Use

Before closing, I would like to say a few words about the need to include a fuel use test as part of the definition of a "qualifying cogeneration facility." As you, Senator Humphrey, indicated in your introduction of the substitute for S.1885, the fundamental reason for encouraging cogeneration and small power production is "the overriding concern for reducing our national dependence on imported oil." While small power production will always lessen our dependence on imported oil, cogeneration under some circumstances can actually increase our dependence.

In spite of this, the FERC never gave meaningful consideration to the question of what types of cogeneration facilities would save oil and what types would not. If any legislation on cogeneration and small power production facilities is to be enacted, it should direct the FERC to carefully consider the fuel use issue, so that the goal of decreasing our reliance on imported oil is not undercut by encouraging the construction of cogeneration facilities that exacerbate that dependence.

One closing word of summary is in order. It is critical that we all understand what the disagreement about the "avoided cost" -- purchase rate issue is all about. The conflict is not between cogenerators and utilities acting on behalf of their stockholders. The interest of utilities in this issue is the protection of their ratepayers -- our customers and your constituents -- from having to pay rates for electricity that are higher than they need otherwise be. Utilities have a responsibility to their ratepayers to control their costs. If utilities have to pay cogenerators for their power at levels that are higher than they ought, it is the ratepayers who suffer. We accordingly ask that any legislation in this area preserve PURPA's balancing of the interests of cogenerators and of ratepayers -- and that you protect the ratepayers from having to bear the costs of payments to cogenerators that are higher than is either necessary or appropriate.

Thank you.

Senator HUMPHREY. Thank you. Mr. Garam.

STATEMENT OF PETER GARAM, ASSISTANT GENERAL COUNSEL, CONSOLIDATED EDISON CO. OF NEW YORK, INC.

Mr. GARAM. Good morning, Senator Humphrey. I appreciate the opportunity of presenting Consolidated Edison Co.'s views on the proposed amendment to S. 1885. I would like to point out that we have long believed in cogeneration. It is the owner and operator of the largest cogenerator system in the free world. It is in a public interest negotiated contract with cogenerators. An example I would like to give you is our agreement, voluntarily, to interconnect with and provide the energy of a proposed garbage burning plant in Westchester County, N.Y.

What we are saying is that cogeneration should be encouraged only where it is in the public interest. And what I would like to discuss this morning are issues we believe that should be considered by the committee in fashioning cogeneration legislation.

We believe that cogeneration should be encouraged if the following four interests are adequately protected. The interest and the need to reduce our Nation's reliance on imported oil, the need of maintaining air quality in our cities where air quality is already marginal, the need to maintain safe and reliable electric utility service, and the need to keep rates to consumers as low as possible.

I will not discuss the interconnection and the full avoided cost issues because they were fully discussed by the previous witnesses and we endorse the statements that they presented. So I will discuss only the fuel use issue and the environmental issue very briefly, and our position is set forth fully in our written statement.

Turning first to the fuel use issue, our position is based on four simple propositions. No. 1 is that reducing our oil imports is in the national interest. You recognized it, sir, when you introduced amendments to S. 1885 last week, and I submit that there really can be no dispute about the firm proposition.

The second proposition is that some forms of cogeneration in some cases will save oil, but at other times they will not. To give you an example of a case where cogeneration will not save oil is, you take the example of Montana Power Co. which its generation is fired by coal. If you have oil- or gas-fired cogeneration, it will increase oil imports, as is obvious.

A case where cogeneration, oil- or gas-fired cogeneration is likely to save oil, is a situation where a utility uses only oil as its fuel, so given relatively high efficiency of cogeneration, when you displace oil-fired utility generation by relatively more efficient cogeneration that's fired by oil you're likely to see an oil savings.

There are many cases in between and we have to look at the facts and circumstances in each case to determine whether in fact oil- or gas-fired generation will save oil and gas.

So that leads to our final proposition, or rather to the third proposition, that cogeneration that does not save oil and is contrary to the interest of reducing oil imports should not be encouraged and should not be given the benefits of PURPA legislation.

Finally, what we're suggesting is that a simple test be adopted to select out the forms and kinds of cogeneration that will not save oil from those that do. We believe that is quite simple. You simply have to compare the oil that is used by the cogeneration facility as opposed to that which would be used by the utility to determine if oil savings would result. The test is set forth in our testimony and I urge you to give consideration to it and to adopt it.

Turning to the environmental issue, certain types of cogeneration facilities pose serious threat to air quality, particularly in dense urban areas. For several years now, Con Edison has urged Federal, State, and local agencies to conduct a systematic review of the environmental effects of cogeneration. As outlined in our testimony, however, our efforts have failed, and we have been unable to get the various Federal, State, or local agencies to consider the question as we take a close, hard look at the environmental effects of cogeneration.

Our studies show that operation of as few as 240 megawatts of diesel cogeneration facilities with rooftop stacks in New York City could cause a violation of the nitrogen oxide standards of the Federal law. So what we are suggesting or urging is that you direct the agencies to systematically review the environmental consequences of cogeneration.

As I said, we endorse what the previous witnesses have said about full avoided costs, and I'll have my statement entered.

Thank you.

[The prepared statement of Mr. Schwartz follows:]

Statement of

BERTRAM SCHWARTZ

on behalf of

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

to the

SUBCOMMITTEE ON ENERGY REGULATION

of the

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

My name is Bertram Schwartz. I am a Senior Vice President of the Consolidated Edison Company of New York, one of the country's largest investor-owned electric utilities and the owner and operator of the largest cogeneration system in the free world. I appreciate this opportunity to review national policies regarding cogeneration and to express Con Edison's serious concerns with the manner in which the Federal Energy Regulatory Commission ("FERC") implemented the federal cogeneration legislation (Sections 201 and 210 of the Public Utility Regulatory Policies Act of 1978 ("PURPA")). Ignoring the overriding National objective of reducing our Nation's excessive dependence on oil imports, FERC has indiscriminately encouraged cogeneration without regard to its impact on our Nation's oil imports. Our concern is directed toward those cogeneration facilities that are fueled with our Nation's scarce resources, especially if they are located in urban areas where they may have severe environmental impacts.

I will also discuss the provisions of an amendment to S. 1885 introduced by Senator Humphrey on May 18, 1982 (Amendment No. 1452). Amendment No. 1452 would reverse the decision of the United States Court of Appeals for the District of Columbia Circuit in the case of American Electric Power Service Corp. v. FERC (No. 80-1789, January 22, 1982).

We were hopeful that S. 1885 would give FERC proper direction not only as to the need for reducing oil imports but also of the need to consider the interests of electric utility customers and the environment. Unfortunately, S. 1885, as proposed to be amended by Amendment No. 1452, fails to assure that cogeneration will not increase oil imports, fails to protect the environment, and could lead to higher rates to electric utility customers and to reduced reliability of electric supply. Accordingly, we have no alternative but to oppose S. 1885 in its present form.

As I will discuss more fully later in my testimony, cogeneration legislation should be governed by the following policies:

1) the benefits provided by the federal cogeneration legislation should not be conferred on facilities fueled by oil or natural gas whose operation would result in a net increase in the use of oil or natural gas;

2) the federal cogeneration program should be implemented with due regard to the protection of the environment, especially in dense urban areas where air quality is marginal;

3) the authority to order utilities to interconnect with qualifying facilities should be delegated to the states pursuant to FERC rules which will (a) assure continued electric utility reliability and safety, (b) require the payment by qualifying cogeneration and small power production facilities ("qualifying facilities") of all reasonable costs of interconnection, and (c) require a determination that any interconnection ordered is in the overall interest of the public; and

4) there should be an equitable sharing between electric utility customers and qualifying facilities of the profits from sales of power from qualifying facilities to electric utilities.

I urge you to take advantage of this opportunity to amend PURPA to ensure that FERC implements the cogeneration program in a manner that advances, rather than frustrates, vital national interests.

Background

During the 1970's, the Nation's greater and greater reliance on foreign oil that was rapidly increasing in price resulted in a foreign trade imbalance of crisis proportions. The National Energy Plan of 1977 ("NEP") contained both an explanation of the problem and a warning if corrective steps were not taken:

> "The diagnosis of the U.S. energy crisis is quite simple: demand for energy is increasing, while supplies of oil and natural gas are diminishing. Unless the U.S. makes a timely adjustment before world oil becomes very scarce and very expensive in the 1980's, the nation's economic security and the American way of life will be gravely endangered. The steps the U.S must take now are small compared to the drastic measures that will be needed if the U.S. does nothing until it is too late."

NEP at vii.

Reducing oil imports was adopted as a national policy of paramount importance, even if it meant a sacrifice in the efficiency with which other, more abundant, fuels were used:

> "To the extent that electricity is substituted for oil and gas, the total amounts of energy used in this country will be somewhat larger due to the inherent inefficiency of electricity generation and distribution. But conserving scarce oil and natural gas is far more important than saving coal."

NEP at xii-xiii (emphasis added). In its report on the National Energy Act, the House Ad Hoc Committee on Energy stated that: "A principal objective of H.R. 8444 is to reduce the future expected United States demand for oil imports." H.R. Rep. No. 95-543 (Vol. 1), 95th Cong., 1st Sess. 80 (1977).*

As part of the Nation's efforts to reduce oil imports, Congress, in 1978, directed FERC to implement a program to encourage cogeneration and small power production. Cogeneration uses energy relatively efficiently. However, the efficient use of energy does not always reduce oil imports. It will in most cases, but it does not always. Congress recognized this fact, and in adopting the cogeneration program, it decided to extend the benefits under this program only to those cogeneration facilities that meet certain requirements for qualification to be established by FERC, and listed the type of fuel used by the facility as one factor to be considered. However, in establishing requirements for qualification, FERC extended the benefits of the cogeneration program to cogeneration facilities whose operation would increase the Nation's imports of oil.*

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* The National Energy Act is a series of five laws (Pub. L. 95-617 through Pub. L. 95-621), one of which is PURPA.

As part of the program to encourage cogeneration and small power production, Congress directed FERC to prescribe rules requiring electric utilities to offer to purchase electric energy from qualifying facilities. However, Congress was concerned that in prescribing rates for such purchases the interests of electric utility customers be protected. Accordingly, it specified that the rates for such purchases "shall be just and reasonable to the electric consumers of the electric utility and in the public interest" and prescribed as a ceiling on such rates "the incremental cost to the electric utility of alternative electric energy" (hereinafter referred to as "full avoided cost").**

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* Order No. 70, 45 Fed. Reg. 17959 (March 20, 1980); Order Granting in Part and Denying in Part Rehearing of Order Nos. 69 and 70, 45 Fed. Reg. 33958 (May 21, 1980).

** Section 210(b) of PURPA.

In implementing this purchase rate provision, FERC disregarded the interests of electric utility customers when it converted the ceiling rate into a floor and established the requirement that in every case utilities must pay the maximum rate for purchases from qualifying facilities; i.e., their full avoided costs.* What this meant is that all the profits from sales of power by qualifying facilities to electric utilities would accrue to qualifying facilities and that electric utility customers would be denied any share of such profits.

In implementing the cogeneration program, FERC also concluded that it had authority to delegate to the states the right to order utilities to interconnect with qualifying facilities without requiring the states to comply with any of the substantive or procedural requirements of the federal interconnection statute.** The federal interconnection statute, which authorizes FERC to order interconnections, provides that no interconnection order may be issued unless FERC finds, among other things, that the interconnection

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* Order No. 69, 45 Fed. Reg. 12214 (February 25, 1980).

** Sections 210 and 212 of the Federal Power Act.

a) is in the public interest;

b) will not place an undue burden on the electric utility;

c) will not unreasonably impair the reliability of any electric utility affected by the order; and

d) will not impair the ability of any electric utility affected by the order to render adequate service to its customers.

Having concluded that FERC violated Congressional intent in its implementation of the cogeneration provisions of PURPA, Con Edison, together with American Electric Power Service Corporation and Colorado-Ute Electric Association, Inc., sought judicial review of certain aspects of FERC's cogeneration rules, including FERC's failure to adopt fuel use criteria for cogeneration facilities, its determination to require the payment of full avoided costs for all purchases from qualifying facilities, and its purported delegation of interconnection authority to the states without imposing any safeguards.

In its January 22, 1982 decision, the Court of Appeals agreed with the utilities that FERC failed to give adequate consideration to the interests of electric utility ratepayers and the public in prescribing the full avoided cost rule and that FERC's purported delegation of interconnection authority was unlawful. The Court of Appeals did hold that Section 201 of PURPA, as construed by the Court, gave FERC sufficient latitude so as not to require adoption of fuel use criteria for cogeneration facilities.

In introducing Amendment No. 1452, Senator Humphrey stated that this amendment would "essentially . . . codify, and thereby validate, the present FERC regulations governing interconnections and 'avoided costs'."* But the amendment would do much more. It would repeal the provision of PURPA that established avoided cost as the ceiling for rates for purchases from qualifying facilities and would thus make it permissible to require utilities to pay more for power purchased from qualifying facilities than what they could generate it for themselves or purchase it from another source. Requiring utilities to pay more than avoided costs for such purchases would raise the rates of electric utility customers and, reversing a fundamental premise of PURPA, would require them to subsidize qualifying facilities.

PURPA Benefits Should Not Be Conferred On Those Oil-Fired Cogeneration Facilities Whose Operation Would Result In Increased Oil Use

There is general agreement across the Nation that our foremost economic problem is inflation. There is also much agreement that the debilitating inflation we suffered in the 1970's derived, in large part, from the scale of our oil imports. Last year we exported about $80 billion in exchange for oil. Along with this hemorrhaging of our wealth, our ravenous appetite for imported oil is threatening our position as a world power and our very sovereignty.

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* 128 Cong. Rec. S5431 (daily ed. May 18, 1982).

As I discussed previously, the overriding purpose of PURPA was to reduce our Nation's use of oil and natural gas.* Given this imperative, government should not confer benefits on facilities whose operation would frustrate this vital national objective by increasing the use of oil.

I recognize that cogeneration uses fuels relatively efficiently. I also recognize that cogeneration will save oil in many cases. But there are cases in which cogeneration will not save oil. When cogeneration is fueled with oil, it will seldom reduce oil imports. Indeed, it will frequently cause increased oil imports. A clear example of the case where cogeneration results in a net increase in oil use is where an oil-fueled cogeneration facility displaces utility generation fueled by coal.

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* Reducing the use of oil and natural gas is no less important today than it was in 1978 when PURPA was enacted. OPEC Still dictates the price of oil. Last year we still imported almost forty percent of our oil requirements, much of it from unstable regions of the world.

In implementing the cogeneration provisions of PURPA, FERC failed to distinguish between those cogeneration facilities that will reduce oil use and those cogeneration facilities that will increase oil use, despite the fact that Congress specified fuel use as a factor to take into account in determining eligibility for PURPA benefits. Therefore, what I urge upon you today is that you amend PURPA by adding a fuel use section, one that will prevent cogenerators from increasing our Nation's dependence on foreign oil. Such a provision, which should be included in all legislation conferring assistance to cogeneration, would require a cogenerator using oil or natural gas to demonstrate that its facility will result in decreased oil and gas use over its lifetime in order to qualify for the benefits provided in the legislation.

The fuel use test would not be difficult to apply. The methodology for the oil and natural gas savings determination is described and illustrated in Appendix A.

You will find that the necessary ingredients for the scarce fuel savings test are, or could be made, readily accessible to state regulatory commissions. The ingredients include: from the utility -- its incremental heat rate and its projection of oil use for incremental electric loads; and from the cogenerator -- his gross heat rate and waste heat recovery, both items he certainly would require in his own project evaluation. Therefore, the administration of the scarce fuel savings test could be left to the state commissions.

Some might claim that such a fuel use test would be difficult to administer. I believe that I have shown that this is not the case. In any event, the effort required to administer the test is a small price to pay for the benefits that will be obtained by reducing our oil imports.

I strongly recommend that PURPA be amended to incorporate the need to demonstrate fuel savings during the lifetime of a cogeneration facility before any benefits are extended to that facility. Otherwise Congress will be encouraging the construction of facilities which increase oil imports. We should not increase OPEC's hold over the United States in order to confer windfall profits on some potential cogenerators who put their well-being above that of our Nation.

Reducing Natural Gas Use Is Just As Important As Reducing Oil Use

The need to conserve natural gas, the only widely-available fuel that can consistently be substituted for oil without major facility modifications and/or environmental problems, is also extremely important, though the "natural gas bubble" is masking the urgency of this need. As noted by former Economic Regulatory Administration Chief Hazel Rollins, the "bubble"

> "is a temporary excess deliverability resulting from conservation, fuel conversions, and pricing provisions of the Natural Gas Policy Act." Speech, delivered December 4, 1979, before the Convention of the National Association of Regulatory Utility Commissioners in Atlanta, Georgia.

Temporary excess deliverability should not blind us to the fact that natural gas reserves have shrunk substantially during the 1970's and that proven reserves continue to shrink.

Indeed, Joseph P. Stevens, in testimony before FERC on behalf of Brooklyn Union Gas Company, a company whose public position on the future of the gas industry is aggressively optimistic, stated:

> "We would urge you to consider the difference between gas reserves and gas deliverability. Sure there is presently a surplus of deliverability, but that doesn't mean that this Commission can assure itself just from that deliverability that the long term services of these pipelines are -- can be adequately maintained. This data tends to show that they cannot -- or they cannot unless there is some rather dramatic change. . . . [W]e think that there is a gas shortage in the sense of gas reserves to maintain long term service to high priority markets." (June 16, 1980).

The long term imperative to assure adequate supplies of natural gas for high priority markets -- residential, small commercial, process fuel and feedstock uses -- remains a cornerstone of our national energy policy. See, *e.g.*, the

March 23, 1981 Report to the Congress of the United States by the Comptroller General entitled "Natural Gas Plan Needed to Provide Greater Protection for High-Priority and Critical Uses" ("Report"). The force of this policy is so great that the Comptroller General disagreed with the decision of DOE to permit the short-term use of natural gas as boiler fuel to displace fuel oil -- a decision prompted by short-term balance of payments and national security considerations. Report, p. 24.

The Comptroller General has found that

> "Various natural gas forecasts indicate that for the remainder of this century natural gas supplies will continue the steady decline begun in 1973. These forecasts signify that the long-term availability of natural gas supply for high-priority and critical uses is an issue in need of attention." Report, p. ii.

Notwithstanding, the Federal Government's signals on the use of natural gas have caused great confusion in the states. New York State, for example, now gives natural gas-fired cogeneration the same favored treatment as it gives to coal-fired cogeneration. Con Edison therefore urges that Congress clearly restate the basic rationale for treating natural gas the same way oil is treated: that natural gas is a superb substitute for oil where no alternative fuel will do, and that natural gas should be husbanded for those uses where the maximum back-out of oil can be achieved. As long as the adequacy of our domestic reserves of natural gas to meet increasing high-priority demand is open to question, natural gas use must be restrained.

Locking in substantial new cogeneration markets to gas will put significant pressures upon the gas industry. In the past, interruptible electric generating loads have served to provide load balancing for distributors, resulting in lower rates for "high-priority" consumers. Cogeneration loads, dependent upon gas, cannot serve the same purpose. Indeed, if cogeneration loads were to serve that purpose, it would mean that they would be interrupted, or curtailed, if gas supplies decrease and curtailments by pipelines increase. This would be counter-productive to the cogeneration markets which will have invested heavily in gas-burning cogeneration equipment. The alternative would be to force distributors to interrupt high-priority loads -- a totally undesirable result. One can expect, therefore, that unless new sources of natural gas are discovered in large quantities, new gas-fueled cogeneration facilities will ultimately be fueled with oil.

To the extent that natural gas is used in a type of cogeneration facility where the technology requires greatly increased use of natural gas, cogeneration is a very poor use of this almost ideal fuel. Such a use at best substitutes natural gas for residual oil -- a very poor long term trade. Thus, "bubble" gas should not be dedicated to new facilities, such as new commercial cogeneration facilities, which either cannot forego the use of gas when the bubble bursts or which must then switch to oil, thereby creating a new, long-lived commitment completely counter to national policy.

Further, gas reserves are being added at a rate well below the rate of consumption. During the decade of the 1970's, natural gas reserves shrank by one-third -- almost 100 trillion cubic feet -- to only 195 trillion cubic feet, and we continue to remove gas from reserves faster than we are adding to them.

Although some respected organizations are projecting improved production and supplies, many others have projected a decline through the 1980's and 1990's. The General Accounting Office, the Department of Energy and the Library of Congress; Exxon, Shell, Conoco; and the National Academy of Sciences, the Harvard Business School and Resources for the Future all are continuing to predict a decline in reserves during the 1980's and 1990's.* A number of these organizations have revised their previous estimates during the last year or two and reflect a more pessimistic outlook. For example, DOE in the 1981 update of its 1980 forecast reduces its forecast of gas supplies for 1990 by 12 percent.* They attribute more than half of this decrease to revised estimates of conventional lower-48 production.

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* "Analysis of Current Trends in U.S. Petroleum and Natural Gas Production," GAO, December 1979.

"Annual Report to Congress - 1980," U.S. Department of Energy, Energy Information Administration, Vol. 3, May 1981.

(Footnote continued on the next page).

While some have pointed to the increase in reserve additions in 1979 as an harbinger of things to come, the fact is

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(Footnote continued from the previous page).

"Pursuing Energy Supply Options: Cost Effective R&D Strategies," Report to the Joint Economic Committee, U.S. Senate, by the Library of Congress April, 1981.

"Energy Outlook 1980-2000," Exxon Corporation, December, 1980.

"The National Energy Outlook - 1980-1990," Shell Oil Company, August 1980.

"Impact of Deregulation on Exploration and Production," paper presented at the Columbia University Energy Forum by F.E. Ellis, Conoco, Inc., May 2, 1981.

Energy in Transition - 1985-2010, National Academy of Sciences, Final Report of the Committee on Nuclear and Alternative Energy Systems (CONAES), 1980.

Energy Futures, R. Stobaugh and D. Yergin, Harvard Business School, 1979.

Energy In America's Futures: The Choices Before Us, National Energy Strategies Project of Resources for the Future (RFF), 1979.

* See "Annual Report to Congress - 1979, Energy Information Administration Vol. 3, August 1980," and "Annual Report to Congress - 1980," Vol. 3, May, 1981.

that in 1979 we consumed almost one-third more gas than we found. Proven reserves fell for the ninth straight year, to the lowest point in 28 years, and although drilling activity is at record levels, it is directed largely at proven areas. Production per gas well is falling as we are extracting less at an increasing rate from previously developed wells.

There is considerable hope that new techniques for producing natural gas from previously unexploited resources as well as enhanced recovery from present sources will increase the availability of natural gas to an extent that would just justify establishing new, long-term uses. I certainly hope so. But until increased availability is demonstrated, we will be "betting on the come" if we allow new gas burners to be built.

Given the continuing loss of reserves and the uncertainty for future gas supplies, we would be taking an unwarranted risk with the future economic well-being of our Nation if we treat natural gas as other than the equivalent of oil -- a depleting, premium fuel whose availability for high-priority and critical uses over the mid- and long-terms must be protected. Until additions to natural gas reserves at least equal consumption, and do so consistently, natural gas must be treated as the full equivalent of oil as far as its need to be conserved is concerned.

There Should Be A Systematic Review Of The Environmental Effects Of Cogeneration

Certain types of cogeneration facilities pose serious threat to air quality, particularly in dense urban areas. For several years now, Con Edison has been urging federal, state, and local agencies to conduct a systematic review of the environmental effects of cogeneration. However, these agencies have failed to do so. In this section of my statement, I will describe these efforts and the agencies' failure to respond. In light of the threat to the environment posed by certain forms of cogeneration, I urge you to direct the appropriate agencies to conduct a thorough review of the environmental effects of cogeneration.

Cogeneration facilities in urban areas, those with no heavy industry, will for the most part be powered by internal combustion engines ("ICE"). This is due to the small thermal requirements relative to the electricity used in residential and commercial buildings and to the low capital cost of diesel and spark ignited internal combustion engines. Unfortunately these ICE's are the worst polluters of all, emitting extremely large amounts of nitrogen oxides per kilowatthour of electricity produced. Gas-fueled ICE's are even worse emitters of nitrogen oxides than oil-fueled diesels.

Based on data reported by the United States Environmental Protection Agency ("EPA"), emissions of NO_x from diesel cogenerating facilities using gas, oil or a gas-oil mixture, will be approximately ten times the NO_x emissions from Con Edison's central station boilers generating an equivalent amount of electricity. And depending on the size, stack height and location of the diesel cogeneration facility, the impact of the NO_x emissions on ground level concentrations could be as much as 100,000 times the impact of NO_x emitted from Con Edison's plants for an equivalent amount of electric generation.

Con Edison's studies show that operation of as few as 240 MW of small diesel cogeneration facilities with rooftop stacks in New York City could cause a violation of the primary (health related) nitrogen oxide (NO_2) standard. The potential level of cogeneration in New York City is far greater.

Does Congress really want diesel engines to be placed in the basements of apartment houses and office buildings? Consider the density with which the buildings are located. Consider the diesel exhausts, discharged from rooftop chimneys in close proximity to the facility's own fresh air intakes and those of its neighbors. Certainly Congress should not encourage this type of cogeneration in urban areas.

Appendix B, a news clipping, gives an account of a health problem in a Federal Building caused by the fumes from a diesel powered cogeneration facility being sucked into the building's own fresh air supply.

Despite the environmental and health hazards posed by a proliferation of certain forms of cogeneration facilities, the responsible agencies -- FERC, the New York State Department of Environmental Conservation ("DEC"), New York City's Department of Environmental Protection ("DEP"), and the EPA -- all are unprepared or unwilling to prevent on-site generators from violating applicable air quality standards.

FERC did prepare an environmental impact statement ("FEIS") on cogeneration in Docket Nos. RM79-54 and 79-55. However, FERC's environmental analysis is inadequate. Moreover, FERC, having identified diesel and dual-fuel cogeneration facilities as posing a potential environmental problem, acted to remove the interim exclusion for qualification of new diesel and dual-fuel facilities before the comment period on its environmental impact statement expired. Con Edison's comments on FERC's environmental impact statement and its petition for rehearing with regard to removal of the interim exclusion were filed with FERC almost a year ago. Yet FERC has not taken any action to date on either of these filings.

Having failed to conduct an adequate environmental analysis of diesel and dual-fuel cogeneration, FERC sought to justify this failure by repeatedly citing the SIP and PSD review processes and State and local laws as being adequate to ensure maintenance of air quality levels adequate to meet national ambient air quality standards.

FERC's reliance on State and local air quality laws and regulations to preclude significant adverse air quality effects of cogeneration is on very shaky ground with respect to the New York City area where there is, by far, the greatest potential for commercial cogeneration. In comments filed on FERC's Draft EIS, the New York State DEC stated:

> "D. AIR QUALITY IN THE NEW YORK CITY AREA
>
> The document consistently refers to existing air quality regulations as being sufficient to prevent levels of development that would cause significant deterioration. New York State is concerned that existing regulations may not be sufficient to prevent substantial adverse air quality impacts in the New York City area."

If the New York State DEC is concerned with the adequacy of existing regulations to prevent substantial adverse air quality impacts, how could FERC rely on the same regulations to prevent substantial environmental impacts? In its August 20, 1980, letter transmitting its comments on the Draft EIS, the New York State DEC stated that "Unfortunately, New York State does not have the degree of permit authority over potential diesel cogeneration that the DEIS indicates." In fact, New York State regulations presently exempt diesel and dual-fuel and spark ignited internal combustion engine powered-cogeneration facilities using diesel oil or natural gas from construction and operating permitting requirements.

FERC also concluded in its environmental impact statement that New York City has the broad authority under its Air Pollution Control Code to ensure the attainment and maintenance of air quality standards. This flies in the face of the comments of the New York State DEC cited above. And while New York City does have the authority to license new pollution sources such as diesel cogenerators and also to conduct programmatic reviews where there is the potential for a number of separate actions having generic or common impacts, the City does not have the responsibility, authority or the funds to establish and carry out long-term air pollution control programs to attain and maintain national ambient air quality standards in the City. The responsibility for developing and implementing such long-term programs lies with the State DEC.

Whatever the scope of the City's authority may be in this regard, it seems clear that the City is neither prepared nor equipped to undertake projects such as the investigation of the potential impact from a mushrooming of on-site generation facilities. A case in point is Con Edison's November 1, 1978 request to the New York City Department of Environmental Protection to conduct a generic environmental impact analysis of the effects of conversions from central station steam and electric generation to on-site steam and electric generation. Notwithstanding City regulations which provide for programmatic reviews where there is the potential for a number of separate actions having generic or common impact,* the DEP denied the Company's petition by letter dated November 28, 1978. The DEP did promise to "carefully investigate the environmental effects of on-site steam and electric generation" and to "iniitiate an in-depth environmental analysis of the cogeneration issue." That was three and one-half years ago and the City DEP has not yet commenced this investigation -- and it is likely that such an investigation will never be undertaken.

While Con Edison agrees that many of the potential cogenerators would be subject to the EPA's PSD permit requirements, it does not agree that this requirement can be expected to mitigate significantly the estimated NO_2 impacts from diesel cogenerators. First, there is no assurance that the owners of these facilities will apply to EPA for a PSD permit. If diesel cogeneration facilities using diesel oil were subject to the State DEC installation and operation permit requirements, it would be reasonable to anticipate that the DEC permit would be conditioned on the cogenerator obtaining a PSD permit from the EPA. However, since such facilities are exempt from DEC licensing, there is no State supervision of these facilities. With respect to New York City, although new cogeneration facilities are subject to the permit requirements under the New York City Air Pollution Control Code as discussed above, there is no evidence that the City DEP intends to condition its approval for such facilities on the issuance of a PSD permit.

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* Executive Order No. 91, issued by the Mayor of the City of New York, August 21, 1977, §13.

A second and more basic reason why the Company believes that the PSD permitting program will not significantly mitigate NO_2 impacts stems from the nature of the PSD permit requirements. The PSD regulations require an applicant to use best available control technology ("BACT") to control pollution. However, EPA has no guidelines setting forth BACT for NO_x emissions from stationary diesel engines. In fact, there currently is no viable control technology to reduce significantly NO_x emissions from such engines. Further, an environmental impact analysis prepared by a prospective cogenerator would be confined to the impact of that single facility, and a single diesel cogenerator by itself will probably not cause a violation of the NO_2 standards. The cumulative impact of other prospective cogenerators would not be addressed.

In sum, there is no assurance that existing national, state and local laws will be adequate to avoid a serious environmental impact from PURPA induced cogeneration facilities in the New York City area. Indeed, there is much evidence to the contrary. I urge you, therefore, to direct the appropriate agencies to conduct a systematic review of the environmental effects of cogeneration.

If New Interconnection Rules Are Adopted, They Should Contain Appropriate Safeguards Respecting Electric Utility Reliability, Safety, Cost Recovery, And The Public Interest

In many cases, utilities will voluntarily interconnect with qualifying facilities. For example, Con Edison recently agreed to interconnect with the refuse-burning electric generating plant that is being constructed in Westchester County, New York. However, there may be cases in which the interconnection of the qualifying facility to the electric utility raises questions of safety, maintenance of electric utility reliability, and public interest concerns. Congress was sensitive to these concerns when it provided a mechanism for the issuance by FERC of interconnection orders in contested cases. Congress specified that FERC may order electric utilities to interconnect with qualifying facilities only if it finds, among other things, that the interconnection

a) is in the public interest;

b) will not place an undue burden on the electric utility;

c) will not unreasonably impair the reliability of any electric utility affected by the order; and

d) will not impair the ability of any electric utility affected by the order to render adequate service to its customers.*

I recognize that it may be burdensome for some qualifying facilities to go through the interconnection procedures at FERC pursuant to the federal interconnection statute. Accordingly, I would have no objection to delegating to the states the authority to order electric utilities to interconnect with qualifying facilities.

However, Amendment No. 1452 would impose on utilities an absolute obligation to interconnect without any exception or limitation and without any consideration of the public interest, safety, or reliability of the electric utility.

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* Sections 210 and 212 of the Federal Power Act.

Although a delegation of interconnection authority to the states is not objectionable, this authority should be accompanied by appropriate procedural and substantive safeguards, such as those contained in the existing federal interconnection statute.

In addition, I submit that it would be a grave mistake to impose on utilities an absolute obligation to interconnect with qualifying facilities without any exceptions. There are cases in which for technical reasons an interconnection involving the backfeed of power into the utility system must not be made at all. Such is the case with Con Edison's unique underground secondary network distribution system.

To supply low-tension service, Con Edison uses an underground network system and a number of radial systems. The underground network system supplies 82 percent of the Company's total system peak load and nearly 100 percent of the load in Manhattan, where the largest amount of cogeneration is expected to develop. The remainder of the Company's load is supplied by the radial distribution system.

The large amount of network load distinguishes the Con Edison distribution system from most other utilities, whose distribution systems are basically radial. For example, the next largest utility in terms of network load, Commonwealth Edison in Chicago, supports a total network load which is only 10 percent of the amount supplied by Con Edison.

The network distribution system serves to enhance the reliability of supply to customers. The characteristic which gives it this advantage is that customers served by the network grid have multiple sources of power. When one source of power, or feeder, is de-energized, the network grid remains energized, the de-energized feeder is isolated, and supply to the customer continues. In contrast, in a radial system, the customer is served by only one source of power. When that source is de-energized, the customer loses service.

While the network system has a unique advantage in highly commercialized areas such as New York City where service reliability is of critical importance, the network system is not as flexible as the radial system in accomodating new sources of power. In the network system, power can flow in only one direction -- from a substation to a customer.

The technical reasons for the necessity to prohibit the backfeed of power into secondary network systems are set forth in testimony submitted by Con Edison to the New York

Public Service Commission in its proceeding implementing Section 210 of PURPA (Case 27574). That testimony is annexed hereto as Appendix C.

In sum, an unrestricted right to interconnection should not be established. If interconnection authority is to be delegated to the states, it should be subject to the basic substantive and procedural protections contained in the existing federal interconnection statute.

Finally, in the interests of electric utility customers, I urge that any new interconnection statute contain the requirement that qualifying facilities should pay all reasonable costs of interconnection.

There Should Be An Equitable Sharing Between Electric Utility Customers And Qualifying Facilities Of The Profits From Sales By Qualifying Facilities To Electric Utilities

Mr. Edward Berlin, testifying on behalf of American Electric Power Service Corporation, will discuss the full avoided cost issue, so my remarks on this issue will be limited.

In enacting Section 210 of PURPA, Congress insisted that in setting the rate for purchases from qualifying facilities, there be a balancing of the interests of electric utility customers, qualifying facilities, and the public. In addition, Congress prescribed a ceiling for such purchases so as to ensure that electric utility customers would not be required to subsidize qualifying facilities by utility purchases from qualifying facilities at rates in excess of the cost the utilities could avoid by making such purchases.

As the Court of Appeals concluded, FERC failed to give adequate consideration to the interests of electric utility customers and the public when it ruled that in all cases utility purchases from qualifying facilities must be made at the utilities' full avoided costs. What this ruling meant is that in all cases qualifying facilities would get all the profits from sales to utilities and that electric utility customers would get none of the profits from such sales.

Amendment No. 1452 would not only institutionalize FERC's full avoided cost rule, but it would also eliminate the ceiling on the rates for purchases from qualifying facilities.

Con Edison objects most strenuously to adoption of this inequitable amendment.

I should emphasize that every additional dollar utilities are required to pay for purchases from qualifying facilities increases the rates electric utility customers must pay. It is the interests of the customers of electric utilities that are at stake when utilities are required to purchase power from qualifying facilities at ever increasing prices.

Before requiring utilities to pay the highest possible price for purchases from qualifying facilities, Congress should consider the plight of electric utility customers, many of whom are suffering hardships in paying their utility bills. I urge Congress to do what it can to provide relief from the pressure of increasing utility bills, rather than to add to such pressure.

In many cases, a rate less than full avoided cost will be just and reasonable to all parties concerned and will provide sufficient encouragement to cogeneration and small power production. In such cases, payment of full avoided costs will provide a windfall to the qualifying facility and will result in unnecessary increases in the bills of electric utility customers. Qualifying facilities will also experience windfalls when the utilities' avoided costs go up and their own costs do not increase. Why should we compound the hardships caused to electric utility customers by another increase in the price of OPEC oil with an increase in the price utilities must pay for purchases from qualifying facilities?

Conferring on qualifying facilities all the profits of utility purchases from such facilities is inequitable to electric utility customers for another reason. Customers of electric utilities are bearing the financial burden, through payment of their utility bills, of a nationwide electric utility system with a net cost in excess of 200 billion dollars. It is the existence of this system that makes it possible for qualifying facilities to profit from sales of power to electric utilities. Surely, equity requires that electric utility customers be allowed to share in these profits.

Amendment No. 1452 would allow state regulatory commissions to establish a rate for purchases lower than full avoided costs if certain findings are made. The relief provided by this provision is illusory. To justify establishing a rate lower than full avoided costs would likely require an examination of the financial condition of the qualifying facility, a step which states are unlikely to undertake.

Amendment No. 1452 would also permit state regulatory commissions to require utilities to pay a rate higher than full avoided costs for purchases from qualifying facilities. This provision, which would require utility customers to subsidize qualifying facilities and which would result in uneconomic investment decisions, should be rejected.

I would like to bring a serious problem to the attention of this Subcommittee regarding the implementation by the states of Section 210 of PURPA. Some states have included in the full avoided cost computation costs that the utility will not be able to avoid by purchases from qualifying facilities. Some states, for example, are requiring utilities to make capacity payments to qualifying facilities despite the fact that they may be wholly unreliable, despite the fact that they assume no obligation to provide capacity to the utility, and despite the fact that the capacity they do provide may not enable the utility to avoid capacity costs. In other words, utility customers are being made to pay for capacity which is of no value.

J. Hunter Chiles, III, DOE's top policy official, recently expressed concern about payments to qualifying facilities in excess of full avoided costs. In testimony presented to this Subcommittee on April 19, 1982, Mr. Chiles stated that:

> "I am concerned, however, that a few states have established rates that are higher than authorized by FERC's rules. The effect of such high rates is, in essence, to subsidize the QF, raise consumer rates, and cause less economical generating sources to displace more economical sources. In some cases, we see the potential for relatively less economical oil or natural gas cogeneration electrical generating sources to replace more economical sources powered with abundant domestic resources, such as coal-fired central station plants. Congress very explicitly did not intend these results."

In order to prevent the serious problems caused by misinterpretation of the full avoided cost concept, I urge Congress to clarify the definition of "incremental cost of alternative electric energy" in Section 210(d) of PURPA so as to preclude the inclusion in the computation of rates for purchases those costs which the utility will not be able to avoid as a result of purchases from qualifying facilities.

In sum, I believe that in enacting the purchase rate provision of PURPA in 1978, Congress intended that there be a balancing of interests of electric utility customers, qualifying facilities and the public. Amendment No. 1452, which disregards the interests of electric utility customers to equitable rates, should be rejected. If the purchase rate provision of PURPA is to be amended, it should provide explicitly for an equitable sharing between electric utility customers and qualifying facilities of the profits from sales of power from qualifying facilities to electric utilities.

CONCLUSION

Supporters of Amendment No. 1452 claim that adoption of this amendment would further the concept of New Federalism by giving states greater autonomy to shape their cogeneration programs. I submit that this amendment represents a distortion of New Federalism by imposing new federal burdens and obligations on electric utilities and their customers without providing them with any of the necessary protections to continued reliable and safe electric service at the lowest cost.

Adherence to the concept of New Federalism would require the transfer to the states of the responsibility for deciding the circumstances in which and the extent to which cogeneration should be encouraged and would require repeal of Sections 201 and 210 of PURPA (other than the exemption provisions).

If Sections 201 and 210 of PURPA are not to be repealed, I urge Congress to take the following steps to ensure that FERC's implementation of the cogeneration program achieves its original objective of reducing the Nation's oil imports consistent with maintaining equitable rates to electric utility customers:

1) amend PURPA to provide that PURPA benefits will not be conferred on facilities fueled by oil or natural gas if their operation would result in a net increase in the use of oil or natural gas;

2) require the appropriate agencies to conduct a systematic review of the environmental effects of cogeneration and amend PURPA by requiring that environmental protection be considered in granting qualifying status to cogeneration facilities;

3) amend PURPA to provide for an equitable sharing between electric utility customers and qualifying facilities of the profits from sales of power by qualifying facilities to electric utilities and clarify the meaning of the term "incremental cost of alternative electric energy" so as to prevent the inclusion in the computation of the rates for purchases from qualifying facilities costs which the utilities will not be able to avoid by making such purchases; and

4) amend PURPA to delegate to the states pursuant to FERC rules the authority to order utilities to interconnect with qualifying facilities which rules will (a) assure continued electric utility reliability and safety, (b) require the payment of all reasonable costs of interconnection by qualifying facilities, and (c) require a determination that any interconnection ordered is in the overall interest of the public.

That is the end of my statement. I would welcome any questions.

APPENDIX A

Test For
Oil/Gas Savings Determination
of an
Oil-or Gas-Fueled Cogeneration Plant

I. Purpose of Testing for Reduction in Oil Imports

Cogeneration facilities are being encouraged under PURPA regulations as a means of increasing efficiency and reducing national oil imports. Although coal and alternate fuel fired facilities would reduce oil imports, the same is not necessarily true of facilities fired by oil or natural gas. This test is designed to determine, by comparing central utility and cogenerator fuel use, whether or not an oil- or gas-fired cogeneration facility will reduce oil imports.

II. Considerations

Several factors need to be evaluated to determine the impact of cogeneration on overall oil consumption. For the cogenerator, its plant operation must be modelled in sufficient detail to accurately assess total annual oil consumption. The plant performance characteristics and the electrical and thermal energy requirements of the load to be served, including waste heat utilization, are an integral part of this assessment.

In comparison, if the cogeneration plant is not installed, the other means of supplying the electrical and thermal requirements of the load to be served must be identified i.e., utility electric supply combined with on-site boiler, utility steam system or other alternatives. Performance characteristics for the on-site alternatives and estimates of the associated energy supplied must be accurately determined and provided by the cogenerator. To the extent electrical or thermal energy would otherwise be provided by the utility, the reviewing agency will obtain from the utility its estimate of its marginal fuel type for at least 10 years into the future. Such estimates shall be prepared in accordance with the utility's operating practice for economically dispatching its system whether for the generation of electrical or steam energy. The utility's estimates will also consider the fuel consumed to compensate for losses incurred when distributing energy. To the extent that the aggregate energy and capacity demands of all potential cogenerators result in a different utility capacity expansion plan, this impact on overall oil requirements must also be evaluated and included in the analysis.

III. Time Frame of Study

Ideally, the period of study should encompass the life of the proposed cogeneration facility; however, firm utility plans do not usually extend beyond fifteen years. For that reason the evaluation of oil/gas oil consumption of the cogenerator vs. that of alternative utility supply will be limited to whatever period of time reliable data is available -- with a minimum requirement of 10 years.

IV. Procedure/Administration

Information pertaining to the utility's marginal fuel types consumed to normally provide electric energy to a cogenerator (or steam energy where appropriate) will be provided by the utility in a standardized data submission annually to the reviewing agency. For Con Edison it is suggested that this be the overall marginal fuel of the Power Pool under the type of utility interconnection and dispatching found in New York State. Provision should also be made to report the impact on oil consumption of changes in utility expansion plans due to the actual or potential installation of cogeneration facilities.

The cogenerator will conduct an analysis of on-site oil/gas consumption with and without installation of the cogeneration facility based on the characteristics of the proposed facility and the characteristics of alternate source of energy generation including the utility data on fuel consumption and marginal fuel use. The analysis would be submitted to the reviewing authority which would verify the validity of the estimates and render a binding decision as to whether the cogeneration facility would save oil/gas over its lifetime and to determine if the facility will reduce oil imports.

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V. Sample Computation

As an example, assume a utility has the following projection of percent oil on the margin and incremental heat rate:

Year	% Oil On Margin	Year	% Oil On Margin
1981 -	100	1986 -	71
1982 -	96	1987 -	67
1983 -	89	1988 -	64
1984 -	82	1989 -	62
1985 -	76	1990 -	61
		1991 -	60

Incremental heat rate = 10,000 Btu/Kwh

(includes T&D losses)

Assume the prospective cogenerator has the following characteristics:

Plant Type - oil-fired diesel with waste heat recovery equipment, oil-fired boiler.

Gross Heat Rate (GHR) - 10,700 Btu/Kwh

Annual Waste Heat Utilization (WHU) - 50%

Conventional Boiler Efficiency (CBE) - 80%

Waste Heat Recoverable (WHR) 4,300 Btu/Kwh

* Net Thermal Value (NTV) 2,688 Btu/Kwh

**Effective Net Heat Rate (NHR) 8,012 Btu/Kwh

Annual Electricity Production 1,000,000 Kwh

Fuel Oil Heat Value #2 Diesel Oil 138,000 Btu/Gal

#6 Residual Oil 144,000 Btu/Gal

* NTV = (WHR)(WHU) ÷ (CBE) = (4300)(.5) ÷ .8 = 2688

**NHR = (GHR) - (NTV) = 10700 - 2688 = 8012

With the above assumptions, annual calculations are shown in Table 1 for the cogeneration facility, in Table 2 for the utility, and the results are compared in Table 3. In this example the analysis is made for a ten year period. The example shows that the cogeneration facility selected for illustration uses less oil than the utility in 1981, 1982 and 1983, but thereafter uses more oil on an annual basis. The cumulative savings are exhausted in the seventh year and after ten years the cogeneration facility uses 9% more oil than the utility. Should the cogeneration facility continue to operate after ten years oil consumption would continue to increase.

It should be observed from Table 3 that the best case to be made for oil savings by a cogeneration facility is when the plant goes into service in 1981. One can also conclude from Table 3 that installations made after 1983 will use more oil the first year in service without ever having saved any oil.

The results of a test such as this are obviously sensitive to the estimate of waste heat utilization of the cogeneration facility and the percent oil on the margin of the utility. Care must be taken in establishing these estimates. Their derivation must be supported by approved methodology and in-depth analysis.

TABLE 1

COGENERATION FACILITY

							Oil Consumption Gallons	
	Effective Heat Rate		Annual Energy		Btu/Gal		Annual	Cumulative
1981	8,012	x	1,000,000	÷	138,000	=	58,058	58,058
1982								116,116
1983								174,174
1984								232,232
1985								290,290
1986								348,348
1987								406,406
1988								464,464
1989								522,522
1990	↓		↓		↓		↓	580,580

TABLE 2

CENTRAL UTILITY

	Incremental Heat Rate		% Oil On Margin		Annual Energy		Btu/Gal	Oil Consumption Gallons Annual	Oil Consumption Gallons Cumulative
1981	10,000	x	1.00	x	1,000,000	÷	144,000	69,444	69,444
1982			.96					66,666	136,110
1983			.89					61,806	197,916
1984			.82					56,944	254,860
1985			.76					52,778	307,638
1986			.71					49,306	356,944
1987			.67					46,528	403,472
1988			.64					44,444	447,916
1989			.62					43,055	490,971
1990	↓		.61		↓		↓	42,361	533,332

TABLE 3

Oil Use Comparison

Cogeneration Facility vs. Central Utility

Year	Annual Use (Gallons) Cogenerator	Annual Use (Gallons) Utility	Cumulative (Gallons) Cogenerator	Cumulative (Gallons) Utility
1981	58,058	69,444	58,058	69,444
1982	58,058	66,666	116,116	136,110
1983	58,058	61,806	174,174	197,916
1984	58,058	56,944	232,232	254,860
1985	58,058	52,778	290,290	307,638
1986	58,058	49,306	348,348	356,944
1987	58,058	46,528	406,406	403,472
1988	58,058	44,444	464,464	447,916
1989	58,058	43,055	522,522	490,971
1990	58,058	42,361	580,580	533,332

APPENDIX B

NEWSDAY - FEBRUARY 24, 1981

Fumes in 2 Buildings Make Hundreds Sick

By Jim Scovel

Exhaust fumes from a power plant felled 13 workers in a Suffolk building yesterday, while at Nassau Community College fumes from an undetermined source made four persons ill and forced the early closing of a building that houses the college switchboard.

The Suffolk incident involved the Internal Revenue Service center in Holtsville where an easterly wind blew a mixture of diesel exhaust and natural gas from the building's power plant into the building's air intake.

At least 13 of the 1,500 employees were sent home ill, while several hundred others, officials said, complained of nausea. The problem has occurred several times before, caused by the wind direction and air intake stacks that are not tall enough, officials said.

Center Director Thomas Laycock said that the six stacks originally had extended only three feet above the roof and had been increased to 10 feet, but are still not high enough.

Laycock said plans have been made to add still another 10 feet to the stacks and to add booster fans to help push the exhaust fumes higher. However, the project won't start until May.

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APPENDIX C

TESTIMONY
OF
GERARD L. BLENKLE
CASE 27574

Q. Please state your name and business address.

A. My name is Gerard L. Blenkle and my business address is 4 Irving Place, New York, New York.

Q. By whom are you employed and in what capacity?

A. I am employed by the Consolidated Edison Company of New York, Inc. as Transmission and Distribution Engineer.

Q. What is your educational background and professional experience?

A. I was graduated from Polytechnic Institute of Brooklyn with the degree of Bachelor of Electrical Engineering in 1958. I joined the United States Army and served as a Lieutenant in the Army Corps of Engineers for one year before joining Con Edison in 1959. I have held a number of positions in the Engineering and Construction Departments including Cable Division Engineer, Division Manager of Engineering - Westchester, District Manager of Construction - Westchester, Station Electrical Equipment Engineer, and my present position as Transmission and Distribution Engineer, which I have held since December 1977.

TESTIMONY
OF
GERARD L. BLENKLE

Q. Are you a licensed Professional Engineer in New York State?

A. Yes .

Q. As Transmission and Distribution Engineer, what are your present duties?

A. I am responsible for the overall administration, coordination and design of electrical overhead and underground transmission and distribution systems.

Q. What is the purpose of your testimony?

A. The Company has been directed to justify the prohibition in its tariffs against parallel operation, which is the direct electrical connection between two electric systems to supply a common load.

My testimony discusses the problems that would be involved in tying on-site generators directly into the Company's system.

Q. What are the basic distribution systems used by Con Edison to supply low-tension service?

A. To supply low-tension service Con Edison uses an underground network system and a number of radial

TESTIMONY

OF

GERARD L. BLENKLE

systems. The radial low-tension service is supplied from primary systems such as: 13 and 27 kV open-wire, 4 kV primary network and URD systems.

Q. Which of the above systems supplies most of the Company's load?

A. The underground network system supplies 82% of the Company's system peak load. The rest of the load is supplied by radial systems.

Q. Is the division of load between network and radial systems the same as for other utilities throughout the country?

A. No. Other utilities basically supply only radial load. The utilities supplying the larger cities have some network load, but it is small in comparison to their total load and extremely small when compared to Con Edison's. For example, the next largest utility in terms of network load, Commonwealth Edison of Chicago, supplies a total network load which is only 10% (630 MW) of the amount supplied by Con Edison. In Manhattan alone, which is nearly 100% network, the network load is about 3,150 MW. In other areas the network load is as follows; Bronx-470 MW (81%), Brooklyn-1,100 MW (80%), Queens-970 MW (76%), Westchester-440 MW (49%) and Staten Island-80 MW (33%). The total system network load is 6,300 MW.

Q. Based on this, is it reasonable to assume that the customer who goes to on-site generation would be in an area supplied by a network?

A. Yes.

Q. Can you explain the composition of a typical network system?

A. A network area consists of distribution feeders, transformers, network protectors, a low voltage secondary mains cable grid, limiters and services. The low voltage secondary main cables in a network area are connected into a solid grid as shown on Exhibit 59 (GB-1). Limiters are installed at junction points in the grid to contain faults on secondary cable within small areas. Distribution feeders originate at a substation or a generating station distribution bus to supply the low voltage grid through network banks. Each bank consists of a step-down transformer and its associated network protector. All distribution feeders in a network area are supplied from the same station supply so as to minimize the potential for circulation of power between the feeders. The practical effect of such a power circulation between two feeders is to unbalance the loading of the network transformers. A large unbalance could overload and possibly burn out transformers and open up the network protectors. This in turn could cause an overloading of secondary mains and possible shut-down of the network area.

Q. What is the nature and function of a "Limiter"?

A. Basically limiters are slow acting fuses similiar to a house fuse. In the event a limiter blows it must be replaced.

Q. Would you explain the nature and function of a network protector?

A. A network protector is an automatic switch which permits current to flow from a supply feeder into a network but opens to prevent current from flowing from the network back into a supply feeder. A mechanical analogy would be a check valve. A network protector with standard sensitive settings will open when the current from the network to the transformer exceeds the magnetizing current of the transformer, which is very small in comparison to the transformer's capability. This is required to permit disconnecting a distribution feeder from the low voltage network automatically whenever the feeder breaker at the supply station is opened for scheduled work or trips because of a feeder fault.

Q. How many network areas are there on the Con Edison System?

A. There are about 50 major network areas in New York City. There are also about 14 small network areas in various municipalities in Westchester.

Q. Are these major networks overhead as well as underground?

TESTIMONY
OF
GERARD L. BLENKLE

A. Basically the major network areas are underground although there are small areas in some of the major networks that have overhead facilities.

Q. What is the average load supplied from an underground low voltage network?

A. The load on a major network varies from 40 MW to about 300 MW. The small network areas in Westchester and Staten Island vary from 1 MW to 47 MW.

Q. How many distribution feeders supply each network area?

A. For the major networks this varies from a minimum of 8 distribution feeders to a maximum of 28 distribution feeders. The average number of feeders is 12.

Q. How many distribution feeders for any given network area can be out of service without affecting service to that area?

A. For New York City the design standard is that two distribution feeders closely associated in a network may be out of service during the peak load period without exceeding design limits in that area. We commonly refer to this as second contingency design. In larger networks additional feeders may be out of service at the same time without affecting service to the network area so long as no more than a total of two are closely associated.

Q. What do you mean when you refer to "closely associated feeders"?

A. When one distribution feeder supplying a network is removed from service for scheduled work or trips out on trouble, the load that was carried by that feeder is automatically picked up on the other feeders supplying the network. The feeders that are closest electrically will pick up the largest portion of load and are considered closely associated. On Con Edison's system, network feeders run in parallel bands with two feeders in each band. The two feeders in each band are closely associated with each other and are also closely associated with two feeders in the bands immediately adjacent. This generally results in each feeder being closely assocated with 5 other feeders in the network.

TESTIMONY

OF

GERARD L. BLENKLE

Q. How are customers supplied from Con Edison's network System?

A. Standard service is supplied at 120/208 volts by connecting service cables to the low voltage secondary grid. Some large customers are supplied with 265/460 volt service from spot networks supplied from the same distribution feeders but not tied to the 120/208 volt grid.

Q. Do you see any problems or limitations in connecting on-site generators to the Con Edison low voltage network system?

A. Yes, I see problems and limitations.

Q. Can any private plant interconnect into the Con Edison 120/208 volt secondary grid system and supply unlimited amounts of power to Con Edison?

A. No. There are system limitations as to the amount of power that can be transferred. Each case must be studied to determine the limit of power that can be transferred.

Q. What are the limitations?

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OF

GERARD L. BLENKLE

A. Direct connection of an on-site generator to this Company's low voltage distribution network system is only possible in instances where the net generation delivered to the Con Edison secondary grid is less than 1 MVA. For larger on-site generating equipment, the only practical way to connect is at an area substation.

Q. Would you please explain the reason for this 1 MVA or approximately 1 MW limitation?

A. Basically, the size of cable and its thermal capability affects its transfer capability. The basic low voltage network distribution cable has a capability of 125 kVA for one set of cables. Space limitations in manholes and thermal limitations in duct banks restrict the number of sets of cables in a duct bank to eight, to which an on-site generator can connect. The load that can be transferred by these cables is approximately 1 megawatt. Thus the interconnection between on-site generation and the Company's network distribution system is limited to approximately 1 MW transfer capability.

TESTIMONY

OF

GERARD L. BLENKLE

Q. Would there be restrictions involved in tying a 1 megawatt on-site generating plant to the Con Edison low voltage distribution network system?

A. Yes. First, the 1 MW of generation would have to be connected at an intersection or node point of secondary mains. If the customer were in between intersections, the transfer capability to the grid would be limited to either 250 kVA or 500 kVA, depending upon the number of sets of cables installed in the street. Second, to avoid an unacceptable increase in the number of operations of network protectors in the vicinity of these generators because of the increased potential for backfeed of power through the network transformer to the primary distribution feeder whenever the on-site generator is supplying power to the Con Edison secondary grid in excess of local load, operational schedules for the power delivered to Con Edison from each generator would have to be developed and strictly adhered to in order to avoid opening network protectors. Additionally, operational schedules would also be required and strictly adhered to by the on-site generator in order to avoid voltage problems during various load conditions. In summary, this means that each case would have to be studied separately.

Q. What could be done to the network protector to avoid opening network protectors on reverse current flow caused by a local on-site generator?

A. This problem could be reduced but not eliminated completely by installing insensitive settings on the network protectors in the vicinity of the on-site generators.

Q. What impact would this change have?

A. Such insensitive settings would greatly increase the cost of servicing these network installations because a visit to such insensitive network protectors would be required to inspect the network protectors and operate them manually on every scheduled outage of the supply feeder. In addition to the cost of inspection and servicing these network protectors, the use of insensitive settings would increase the length of time the distribution feeder is off the system which in turn would increase the exposure of the network area to additional failures that could result in serious overloads and possibly more failures. For these reasons, such a change in setting would be unacceptable.

Q. Could the size of the on-site generator connected to the low voltage grid be increased above 1 MW if these insensitive settings were installed?

A. No. The physical and thermal limitation on cables previously mentioned would still apply.

Q. Are there problems associated with the number of on-site generators rather than any given on-site generator?

A. Yes. For any given on-site generator, the required engineering effort can be expended in reviewing designs and providing consultation to assure an adequate design. Field forces can treat a few on-site generators as special cases in the event of trouble. However, the amount of engineering time required is impractical when considering the potentially large number of on-site generation customers involved. Additionally, operational control of a large number of small on-site generators is a problem.

Q. Do you have any experience with on-site generators to know the approximate engineering man-hours required to review a design and provide consultation?

A. Yes. The Bronx Frontier Development Corporation was given permission to parallel a wind turbine generator in October 1979 with the network in the Hunts Point section of the Bronx. The maximum output of the installation is 20 kW. Permission was granted so that we could obtain research and development data on such installations. Several hundred man-hours were expended by our engineers in reviewing design and consulting with the customer and his representatives to insure a safe and reliable parallel operation. To assure that other customers adjacent to the wind turbine installation will not be adversely affected by the quality of voltage waveshapes produced, additional engineering and testing is required.

TESTIMONY

OF

GERARD L. BLENKLE

Q. If the customer were required to reimburse you for your engineering time, would it have been economical for him to have installed the wind generator?

A. No.

Q. As you gain more experience with on-site generators, will the required engineering time be reduced?

A. The required engineering time will not be reduced until industry standards are developed with respect to the characteristics of on-site generating equipment and devices. At the present time, no such standards exist and each installation must be reviewed separately.

Q. Would all on-site generators give you the same problems?

A. No. Some of the problems, such as control of overvoltages, frequency and operation of network protectors, are common to all types of on-site generators. In addition, harmonic problems are associated with the application of windmills and photovoltaic systems. These systems use inverters, which change various forms of power into AC power.

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OF

GERARD L. BLENKLE

Q. Are you stating that it is not possible to control all of the above?

A. No. But to do all of that would involve detailed review of all designs and drawings, the cost of which could be as much as the unit itself depending on its size, and checking that they are built and maintained properly. This would be a tremendous burden on a utility company.

Q. Can protective devices be installed within the on-site generating installation to avoid problems with voltage and frequency?

A. Yes. Protective devices, similar to our network protector relays, can be installed to avoid problems with voltage and frequency. These devices would trip the on-site generator.

Q. Would this be acceptable?

A. No. There is no assurance that throughout the years these devices will be adequately maintained. Therefore, the service to other customers could be adversely affected.

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OF
GERARD L. BLENKLE

We have over 20,000 network protectors on our system and a very diligent maintenance program, yet we are still experiencing problems with network protectors not opening up on backfeed.

Q. Have you had experience with customer owned equipment, other than on-site generating type, where maintenance was a problem?

A. Yes. Hi-tension customers are responsible for maintaining their equipment. Throughout the years, experience has shown that adequate maintenance was not performed, which caused unnecessary operations of our circuit breakers, to clear customer equipment failures. Generally, because of the customer's lack of maintenance we do not permit paralleling of our high tension feeders at their installations.

Q. If the customer's on-site generation is equal to or less than his off peak load, so that he cannot electrically send any power back to the Con Edison system, do you see any problems?

A. No. As long as it is not having an adverse effect on the voltage wave.

Q. Aside from the problems stated above, are there any other problems with a large number of on-site generators?

A. Yes. The power output from all of the individual generators must meet a preset schedule. Since the network grid cannot supply power back into the primary feeders because of network protectors opening, the total on-site generation in a network grid should not exceed the network load. If the network load is exceeded and all of the network protectors open isolating the low voltage network, frequency and voltage problems can occur, leading to local power interruptions. Chances of generation exceeding the load are most likely to occur during the night when the load is low.

Q. In summary then, is the low voltage secondary grid of a network system suitable for the interconnection and parallel operation of on-site generating equipment?

A. Definitely not.

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OF

GERARD L. BLENKLE

Q. Can you summarize reasons why it is not suitable?

A. Yes. A secondary network system is designed for power flow in one direction and a reversal of power is prevented by the opening of the network protectors. While it is theoretically possible to tie an on-site generator of less than 1 MVA, net, into the secondary network, the potential problems of such a tie-in renders the use of the secondary network wholly impractical. Each on-site generator is in essence a small generating station. It would be impossible to efficiently design, operate, control and maintain a network system with many small decentralized generating stations.

Q. Mr. Blenkle, in your earlier testimony you indicated that some large customers are supplied with 265/460v service. Do you see any problem in connecting on-site generators to this system?

A. Yes. 265/460v service comes from spot networks that are not tied to the 120/208v grid. Therefore, there can be no transfer of power to Con Edison with the present design due to the problem with network protectors discussed earlier where they open on reverse flow.

Q. What could be done so that power could be transferred from the 265/460v spot network.

A. That would require connection to a 120/208v network grid through a transformer at an approximate cost of $60,000 per installation to allow the generation to supply additional low tension load without having to backfeed to the distribution feeders through a network protector.

Q. Mr. Blenkle - Now that you have covered the problems associated with connections into the low voltage network grid, are there any problems or limitations in connecting an on-site generator to a network high tension feeder so that power can be transferred to the utility.

A. Yes, there are. In addition to the problems discussed earlier for low tension interconnection, namely; harmonics, voltage, scheduling and need for individual review, there is a problem unique to the high tension feeder supplying network load. The design basis of the network system is symmetry. That is, each feeder supplying the network grid should ideally carry an equal share of the total load. Each transformer connected to the feeder should also carry its proportional share of the load. In practice there are inherent differences in the configuration and magnitude of the load from one part of a network to another, bringing about an unequal loading of feeders and transformers. The inherent differences, due to a natural dissymmetry in the system, do not cause any operating problems. An on-site generator would cause further dissymmetry and depending upon its location and the magnitude and phase angle of the voltage at the point of interconnection, it would be possible to overload transformers on the feeder. In addition, at light loads, the natural power flow can be altered by on-site generators to cause the opening of network protectors resulting in further dissymmetry and overloads. Because of the overloads and their possible consequences a cascading effect could be brought about which, under certain system conditions, could cause the shutdown of an entire network. Accordingly, each application for on-site generation would have to be studied to determine the extent of the problems that could be caused both now and in the future.

Q. Is it possible that an on-site generator might have a limited adverse effect today, yet cause problems on the network in the future?

A. Yes. Networks reflect the dynamics of the areas they supply. As New York City changes, with some areas developing and others on the decline, the electrical load of these areas also change. As an area increases in load, there is a point at which the network supplying that area must be divided into two networks. The size of a network as related to its ability to carry load is determined by whether it can be re-energized after a shutdown. Since network configurations change, a study might show that there is a limited adverse effect of an on-site generator today and yet problems could arise in the future because of the network changes.

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OF
GERARD L. BLENKLE

Q. In summary then, would you say that a network high tension feeder should not be used as a connection point for on-site generation?

A. Yes. Because of the problems I previously mentioned. In addition, as noted earlier, our System Operator and District Operators would have to be responsible for coordinating the energy interchange between Con Edison and the private plant operators, including the safety of our personnel working on the distribution feeder cables and equipment, and the safeguarding of the equipment. It would not be feasible to burden them with the responsibility for a multiplicity of very small plants.

Q. Are there any limitations with respect to connecting an on-site generating unit via an allocated feeder to one of Con Edison's area substations?

A. Yes. The amount of generation would be limited by the short circuit capability of the substation circuit breakers. Each allocated feeder from an on-site generating unit would increase the short circuit duty on the substation bus. The MW capacity of on-site

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OF

GERARD L. BLENKLE

generators that would be tied to any one substation will vary but in no case could it be over approximately 20 MW total.

Q. Please define what you mean by short circuit capability and the consequences of exceeding the capability of the breakers?

A. Short circuit capability is the ability of a piece of electrical apparatus to withstand the forces created by an electrical fault and in the case of a circuit breaker, to safely disconnect the faulty cable or apparatus without damage to itself. The consequences of exceeding the short circuit capability are damage and destruction of the station equipment and the potential injury to personnel.

Q. Can any modifications be made to reduce the short circuit duty on the substation bus and increase the on-site generation above 20 MW?

A. Generally no. Because of space limitations in the metropolition area, our substations are of a compact metal clad design. Extensive modification to add reactors to reduce the short circuit duty would be required at a cost of millions of dollars.

Q. Could this capacity reduce or defer Con Edison's need to install additional transformer capacity into an area station where the on-site generator is located?

A. In order for this capacity to impact Con Edison's plans for future transformer additions, the capacity must be available when required by the Company. Specifically, the excess generating capacity would have to be reliably available during peak load periods.

Q. Do you know of any on-site generating plants that have been connected to the Con Edison's area substations via allocated feeders?

A. Yes, the only instance of which I am aware of this occurring was between a generating plant at the Brooklyn Navy Yard and Con Edison's 27 kV distribution bus at the Hudson Avenue Generating Station. This situation existed from 1948 to 1971.

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OF

GERARD L. BLENKLE

Q. Would you please describe that on-site generation and the method by which it was connected to the Con Edison system?

A. The Navy Yard plant consisted of four generators with a total rated capacity of 23.5 MW. The plant was tied to the Hudson Avenue station via three 27 kV allocated distribution feeders. It should be noted, however, that the Navy Yard was directly across the street from our station; therefore, the feeders were not lengthy.

Q. Up to this point, you have been setting forth the problems associated with connecting the on-site generation to Con Edison's network system. Is it possible to directly connect such an installation to those parts of Con Edison's franchise area where service is supplied by a radial distribution system?

A. Yes. However, in areas supplied by Con Edison's radial distribution system the transfer capability is dependent upon the voltage class of the radial feeder. Thus, for a 4 kV feeder the maximum transfer capability of an on-site generator to the Con Edison system is limited to the capability of a 4 kV feeder, which is approximately 2.5 MW. The maximum transfer capability from the Con Edison system to the on-site generation would be 2.5 MW less the normal load on the feeder.

For a 13 kV feeder, the maximum transfer capability of an on-site generator is limited to approximately 6 MW, and for a 27 kV feeder, the maximum transfer capability is limited to 9 MW.

As in the case of a 4 kV feeder, the maximum transfer capability from the Con Edison system to the on-site generation on a 13 kV or 27 kV feeder would be 6 or 9 MW less the normal load on the feeders.

In addition, there is also the station limitation of approximately 20 MW because of circuit breakers short circuit limitations.

Q. How do you explain that radial feeders would be acceptable to connect on-site generators and the network system is not?

A. The essential difference between the two systems is that in the radial system the power could flow freely in either direction; from a substation to a customer and vice versa. Also, the customer has only one source of supply and when that source is de-energized, the customer is out of service.

In the network system, power can flow freely only in one direction; from a substation to a customer. The reverse power flow is prevented by the network protectors, which open up.

The purpose of preventing the reverse power flow is to isolate the feeder from the grid, when the feeder develops a fault or is removed from service for scheduled work. The customer in this case is supplied from a network grid, which has multiple sources of supply. When one source (feeder) is de-energized, the grid remains energized and so are all the customers.

Q. Mr. Blenkle, your testimony indicates that there is a limitation in the low voltage secondary distribution system transfer capability between a customer and the Company. In view of this limitation would you please explain how customer's premises with load exceeding 1 MW are served from the Company's network system?

A. In response to this question I will assume that a customer owning a building with an internal load of 5200 kVA located in our network system requests service from the Company. Because of the above mentioned limitations on the Company's network area low voltage secondary distribution system, the Company must install transformers at the Customer's premises. The 120/208V transformers will be supplied directly from the network distribution feeders which operate at 13 kV, 27 kV or 33 kV depending on the network area. To supply this customer's load of 5200 kVA, 6-1000 kVA transformers and associated network protectors are required under the Company's second contingency design standard. I have prepared a diagram marked Exhibit 60 (GB-2) which shows the basic installation design to meet the load in this building. These transformers are paralleled on a low voltage bus through their network protectors. From this low voltage bus, four service takeoffs supply the building. This bus is also tied to the street network grid through 8 sets of cables.

Even assuming the customer in the aforementioned hypothetical case installed on-site generation and maintained full breakdown service from Con Edison there would be only a 1 MW transfer capability from this on-site generation to Con Edison's system.

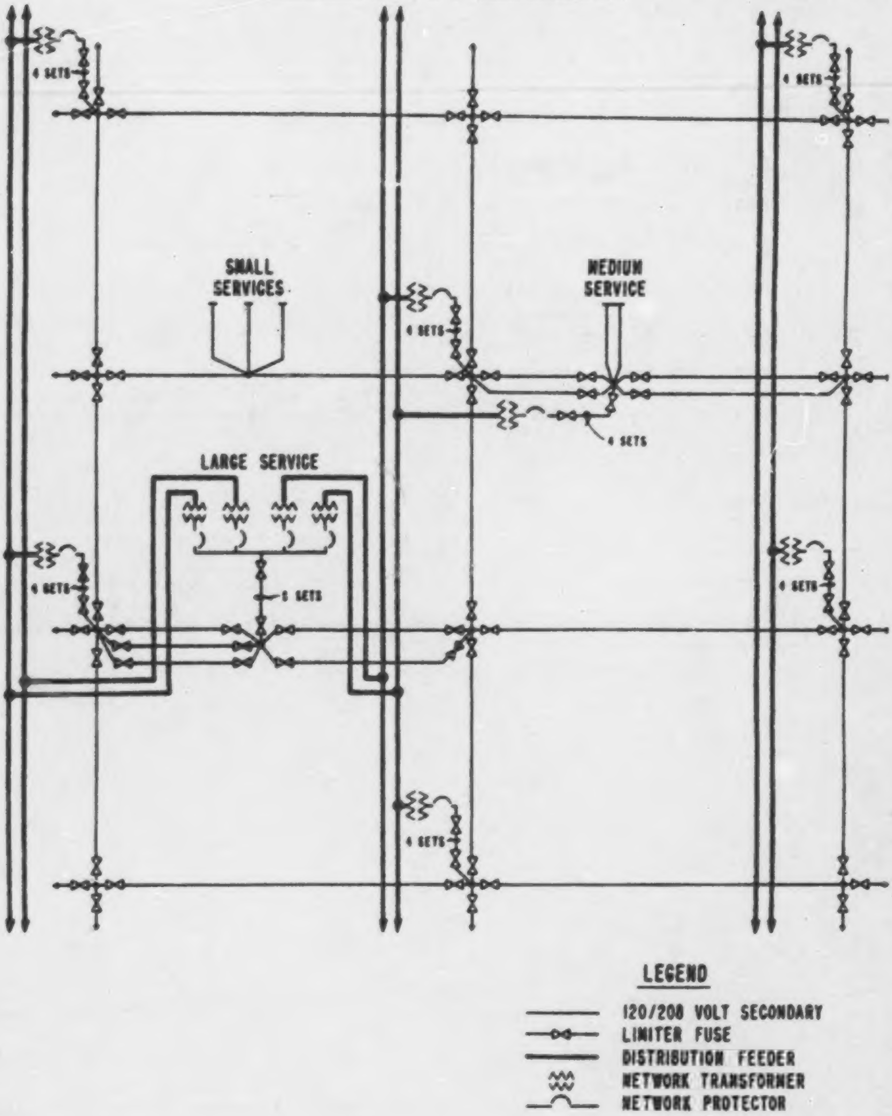
Q. What are your final conclusions on the issue of parallel operations?

A. For the reasons I have stated, no one should be permitted to parallel with the secondary network or its primary supply feeders. Parallel operation should be restricted to the use of radial feeders or feeders allocated to substations up to the limits I have previously described.

Ex. 59

EXHIBIT (GB-1)
PSC CASE 27574

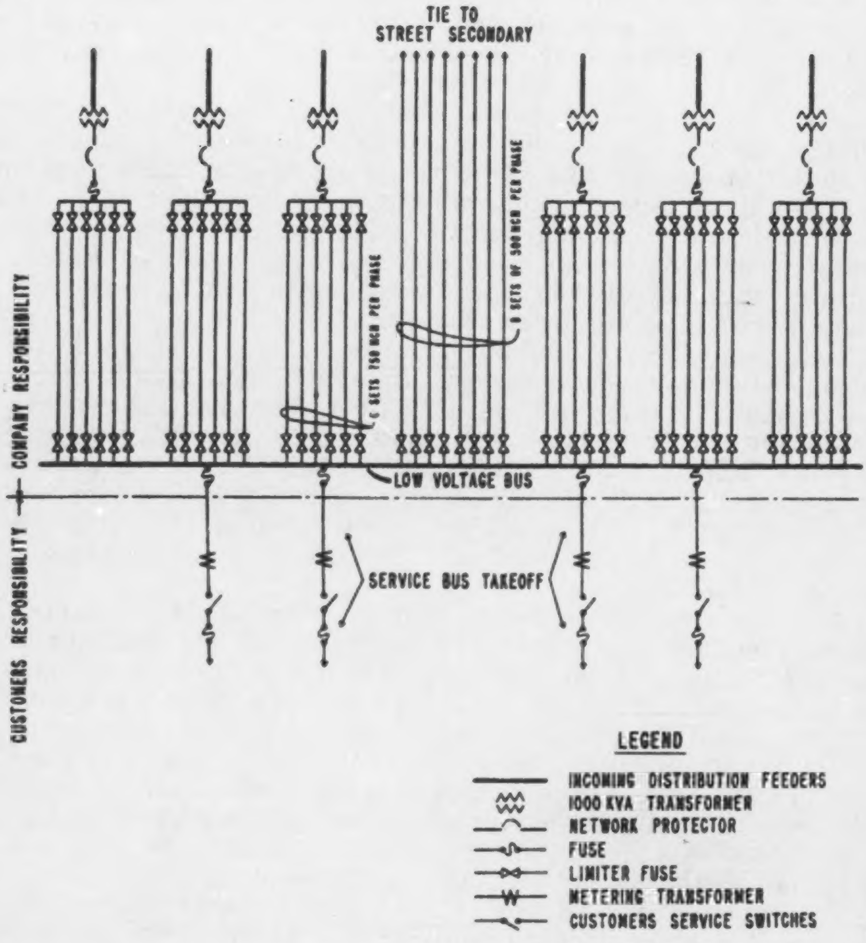
TYPICAL LOW VOLTAGE NETWORK


4 SETS
4 SETS
SMALL SERVICES
MEDIUM SERVICE
4 SETS
4 SETS
LARGE SERVICE
4 SETS
5 SETS
4 SETS
4 SETS
LEGEND
120/208 VOLT SECONDARY
LIMITER FUSE
DISTRIBUTION FEEDER
NETWORK TRANSFORMER
NETWORK PROTECTOR

Ex. 60
EXHIBIT (GB-2)
PSC CASE 27574

NETWORK INSTALLATION

LARGE LOAD - 5200 KVA


TIE TO STREET SECONDARY
8 SETS OF 500 MCM PER PHASE
6 SETS 750 MCM PER PHASE
COMPANY RESPONSIBILITY
CUSTOMERS RESPONSIBILITY
LOW VOLTAGE BUS
SERVICE BUS TAKEOFF
LEGEND
INCOMING DISTRIBUTION FEEDERS
1000 KVA TRANSFORMER
NETWORK PROTECTOR
FUSE
LIMITER FUSE
METERING TRANSFORMER
CUSTOMERS SERVICE SWITCHES

Senator HUMPHREY. Thank you.

STATEMENT OF DR. GLENN J. BJORKLUND, VICE PRESIDENT, SOUTHERN CALIFORNIA EDISON CO.

Dr. BJORKLUND. Good morning. Greetings from California.

I'm vice president of Southern California Edison, responsible for the strategic and future planning for the company's resources.

Just by way of background, we are an investor-owned utility serving about 50,000 square miles in central and southern California, with some 800 cities and more than 8 million people. It's good to be able to be here with you and tell you a little bit about our success story in implementing PURPA and coming along with cogeneration and small power production.

In the fall of 1980 we dedicated a substantial share of our future energy resources to the alternative forms of energy production. As a matter of fact we established the goals of some 2,100 megawatts of generating capacity for our system during the 1980's. That's 2,100 megawatts out of a total 6,000 megawatts that would come from the alternative and renewable energy resources. More than half of this 2,100 megawatts we were counting on to come from cogenerators and small power producers.

Today we have executed 60 contracts for over 1,000 megawatts of cogeneration and small power production, and significantly, we have done this consistent with PURPA, and the vast majority of these contracts have been negotiated at less than full avoided cost.

It is so important that I emphasize to you that it's our ratepayers who are benefiting from our negotiating less than full avoided cost. The company's earnings are not affected one iota by what we are doing. Because of this we find it necessary to oppose the amendments of the bill.

And most succinctly, let me mention three or four points. The legislation that will mandate full avoided cost payments or allowing the States to do so, will force the electric customers, your constituents and ours, to pay more for electricity than necessary. This is just more than delegation to the States. The of principle of full avoided cost payments places the burden on the States or the utilities to justify any different price. We feel that because of our experience such legislation is premature, and pending the litigation, including the ones before the U.S. Supreme Court now, that will determine whether or not legislation is really needed.

Our experience in negotiating so many of these contracts demonstrates that mandating or implying full avoided cost payments is not necessary to encourage the development of cogeneration. Allowing the utilities to negotiate the purchase price will protect the electric consumers and still allow the small power producers and cogenerators their fair rate of return.

And the present statutory provisions on interconnection protect the electric utility system and their customers from being damaged and really shouldn't be changed.

The proposed amendments to PURPA would seriously undermine the negotiations between the qualifying facility and the electric utility to the detriment of our consumers. The qualifying facility and the utility, the electric consumer would be hurt because he would not receive the benefit of the negotiated rate at less than the full avoided cost.

For example, if we are allowed to negotiate contracts with private power producers at say 90 percent rather than 100 percent of the full avoided cost, we've calculated that by 1990 it will save our ratepayers in excess of $100 million. The qualifying entrepreneur is hurt because the negotiation of a price in exchange for utility expertise would be hindered. The electric utility would be harmed because our stewardship efforts to our ratepayers are going to be hampered. Not only will the mandatory payment of full avoided cost harm the consumer, the qualifying facility and the electric utility, but it's not really essential as our track record demonstrates.

I might add that, and we've seen this from experience in the last few months, that computing the avoided cost is a complex matter. It is not subject to a simple uniform methodology. State regulatory agencies calculation and criteria on avoided cost are sometimes at variance with PURPA and with the electric utility's planning and operational characteristics. This could result in the utility having to pay prices far in excess of the costs that are actually being avoided.

Traditionally the sale of electric power at wholesale has been subject to exclusive Federal regulation. In several key areas this substitute bill would delegate Federal regulatory authority to the respective State regulatory agencies without providing the sufficient guidelines and standards to which the States must adhere.

The States could ultimately determine the price, whether below, at or above avoided cost which the utilities must pay for cogeneration of small power producers. The States could also establish the terms for interconnection of an electric utility system with the cogenerator and small power production facility and the extent, if any, to which electric utilities could have ownership interest in cogeneration or small power production.

We believe that an unequal and inconsistent implementation of the Federal principles will result. Such a result would combine with the complex interplay of Federal and State responsibilities established by this bill would create confusion and would undoubtedly result in further litigation and I'm sure further delay into a complex situation that we are just now starting to understand.

This further delay is not needed at a time when there is a stable regulatory environment in which the utilities and qualifying facilities could work together more effectively to achieve the original intent of PURPA, to encourage the development of alternative and renewable resources consistent with the interest of the electric utility, the customer and the public.

For these reasons that I've mentioned, Southern California Edison Co. must oppose the amendments to this bill.

Thank you very much for hearing me today. We'd be more than happy to answer your questions.

[The prepared statement of Dr. Bjorklund follows:]

ABSTRACT OF
STATEMENT
OF THE
SOUTHERN CALIFORNIA EDISON COMPANY
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY & NATURAL RESOURCES
OF THE
UNITED STATES SENATE
WASHINGTON, D.C.

May 24, 1982

I. Introduction

My name is GLENN J. BJORKLUND. I am a Vice President of the Southern California Edison Company. The Southern California Edison Company is an investor-owned public utility providing electric service in a 50,000 square-mile area of Central and Southern California. This area includes some 800 cities and communities with a population of more than eight million people. We appreciate this opportunity to appear before you today to tell you about our Company's success in accelerating development of alternate and renewable resources. We also want to explain the reasons why we oppose this bill, based on our experience with the development of alternate and renewable resources. Southern California Edison opposes this bill because:

1. Legislation mandating full avoided cost payments or allowing the states to do so forces electric utility customers -- your constituents -- to pay more for electricity than necessary by establishing a false price.

2. This is more than just a delegation to the states. This measure embodies the principle of full avoided cost payments and places a burden on the states and utilities to justify any different price.

3. Such legislation is premature. Pending litigation, including one case already argued before the U. S. Supreme Court, will determine whether legislation is needed.

4. Edison's experience in negotiating many, many contracts clearly demonstrates that mandating full avoided cost payments is not necessary to encourage the development of cogeneration or other qualifying facilities. Allowing utilities to negotiate the purchase price will protect the electric consumers and still allow the small power producers and cogenerators a fair return on their investment.

5. The present statutory provisions on interconnections protect electric utility systems and their customers from being damaged and should not be changed.

II. Southern California Edison's Commitment to Accelerated Development of Alternate and Renewable Energy Sources

Our corporate mission is to provide safe, reliable, and efficient electric service to our customers at fair prices while providing a fair and reasonable return to our shareholders. The Company recognizes the value of alternate and renewable energy resources as a means of establishing a cost effective energy strategy for the benefit of our ratepayers and shareholders. Beginning in October 1980, we dedicated a substantial share of our future energy resources to renewable and alternate forms of energy production. We have established a goal of adding 2,100 MW of generating capacity to our system in the 1980s from these energy sources. More than half of this amount is to be obtained from cogenerators and small power producers. To date, we have executed approximately 60 contracts or letters of intent totaling 1,000 MW with independent power producers. In order to reduce costs to our ratepayers, and consistent with the Public Utility Regulatory Policies Act of 1978, as amended, (PURPA), most of these contracts have been negotiated at a price less than our highest or full avoided cost of power. I want to emphasize the fact that only our ratepayers directly benefit from these less than full avoided cost contracts; the Company's earnings are not increased.

III. PURPA Avoided Cost Provisions

PURPA was enacted to encourage the development of qualified cogeneration and small power production facilities and thereby reduce our nation's reliance on expensive foreign oil. To accomplish this result, Congress required that the price an electric utility pays for purchases from a qualifying facility be (i) just and reasonable to the electric consumers, (ii) in the public interest, and (iii) nondiscriminatory. However, in no case can a utility be required to pay more than the full avoided cost of the purchasing utility. Congress's approach to determining the price to be paid recognized the importance of providing a regulatory environment that minimally interferes with free marketplace forces. This approach also recognized the need to balance the interests of electric consumers, the public and the qualifying cogenerators and qualifying small power producers.

IV. PURPA Litigation

In implementing PURPA, the Federal Energy Regulatory Commission (FERC) issued regulations that required electric utilities to pay full avoided cost to qualifying facilities. Recently, the United States Court of Appeals for the District of Columbia in American Electric Power Service v. FERC ruled that FERC, by setting all purchases at the maximum full avoided cost rate, ignored the congressional mandate that the price should be just and reasonable to the electric consumers and in the public interest. The Court also struck down the FERC regulation requiring interconnections with qualifying facilities without following the procedural and substantive safeguards set out in PURPA. The U.S. Supreme Court has been asked to review this decision.

Another case involving PURPA has already been argued before the Supreme Court. In FERC v. Mississippi the Federal District court held that Section 210 of PURPA, which contains the provisions on cogeneration and small power production, improperly intrudes upon State sovereignty in violation of the Tenth Amendment to the U. S. Constitution.

V. Congress Should Not Amend PURPA Until the Litigation is Resolved

With the ultimate outcome in both of these cases unknown, we believe that any amendments to PURPA are premature. At this time, it cannot be determined whether, and to what extent, new legislation may be required once final decisions are rendered. Further, it must be emphasized that the American Electric Power case resulted from erroneous administrative agency rulemaking. There is nothing wrong with the pricing criteria provisions of Section 210 of PURPA or the interconnection provisions. What is needed now is prompt rulemaking by FERC which implements Congress's intent that pricing under PURPA balance the interests of electric consumers, the public and qualifying facilities.

VI. Detrimental Impacts of Mandating Full Avoided Cost Payments

As I mentioned earlier, we have successfully executed 60 contracts or letters of intent totaling approximately 1,000 megawatts, nearly all of which have been negotiated at a rate below full avoided cost. These proposed amendments to PURPA would seriously undermine negotiations between the qualifying facility and the electric utility to the detriment of the electric consumer, the qualifying facility and the utility. The electric consumer would be hurt because he would not receive the benefit of a negotiated rate at less than full avoided cost. For example, if we were able to negotiate contracts from private power producers at, say, 90% rather than 100% of full avoided cost, we would save the ratepayers in excess of $100 million by 1990. The qualifying entrepreneur would be hurt because the negotiation of price terms in exchange for utility expertise would be severely hindered. The electric utility would be hurt because its stewardship efforts would be severely hampered. Not only will mandatory payment of full avoided cost hurt the electric consumer, the qualifying facility, and the electric utility, it is not essential, as our track record demonstrates, to encourage the development of cogeneration and small power production, PURPA's primary purpose. I might add that the computing of avoided costs is a complex matter and is not subject to uniform methodology. State regulatory agencies' calculations and criteria on avoided costs are sometimes at variance with PURPA and with the electric utility's planning and operational characteristics. This could result in a utility having to pay prices in excess of the costs it has actually avoided.

VII. Interconnection

The substitute bill would give FERC the discretion to exempt qualifying facilities from the interconnection provisions of PURPA, which are designed to provide both substantive and procedural safeguards to protect an electric utility's system from damage or degradation. Although the risks from interconnections with qualifying facilities may not be of the same magnitude as interconnections between utilities, this substitute bill is objectionable because safeguards must be established which will ensure that our electric system's integrity and reliability is preserved.

VIII. Delegation of federal regulatory authority to the States

Traditionally, sales of electric power at wholesale have been subject to exclusive Federal regulation. In several key areas, this substitute bill would delegate federal regulatory authority to the respective state regulatory agencies without providing sufficient guidelines or standards which the state agencies must adhere to.

The states could ultimately determine:

(1) the price - whether below, at, or above avoided cost - which electric utilities must pay for power purchased from cogenerators and small power producers;

(2) the terms for interconnection of an electric utility's system with a cogeneration or small power production facility; and

(3) the extent, if any, to which electric utilities could have an ownership interest in cogeneration or small power production facilities.

We believe that unequal and inconsistent implementation of the federal principles will result. Such a result, when combined with the complex interplay of federal and state responsibilities established by the bill, would create confusion and would probably lead to further litigation.

This would further delay the time when there is a stable regulatory environment in which utilities and qualifying facilities could work together more effectively to achieve the original intent of PURPA -- to encourage the development of alternate and renewable resources consistent with the interests of the electric customer and the public.

For the reasons I have mentioned Southern California Edison opposes this bill. We have a number of additional specific comments on the substitute bill that are set forth in our detailed written statement.

On behalf of the Southern California Edison Company, I appreciate this opportunity to present our views and welcome the opportunity to answer any questions that you may have. Thank you.

STATEMENT
OF THE
SOUTHERN CALIFORNIA EDISON COMPANY
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY & NATURAL RESOURCES
OF THE
UNITED STATES SENATE

WASHINGTON, D.C.

May 24, 1982

I. INTRODUCTION

Southern California Edison Company is an investor-owned electric utility with almost 200,000 shareholders. We serve a 50,000 square mile area of Central and Southern California, including some 800 cities and communities with a population of more than eight and a half million. We have over 14,500 employees. Our headquarters is in Rosemead, California. Edison provides electric service to residential and industrial customers, and several municipalities which are resale customers. In 1981 Edison provided its customers with over 62 billion kilowatt hours of electricity.

Southern California Edison appreciates this opportunity to tell you about our Company's success in accelerating development of alternate and renewable resources. We also want to explain the reasons why we oppose this bill, based on our experience with the development of alternate and renewable resources. Southern California Edison opposes this substitute bill to S. 1885 because:

1. Legislation mandating full avoided cost payments or allowing the states to do so forces electric utility customers -- your constituents -- to pay more for electricity than necessary by establishing a false price.

2. This is more than just a delegation to the states. This measure embodies the principle of full avoided cost payments and places a burden on the states and utilities to justify any different price.

3. Such legislation is premature. Pending litigation, including one case already argued before the U. S. Supreme Court, will determine whether legislation is needed.

4. Edison's experience in negotiating many, many contracts clearly demonstrates that mandating full avoided cost payments is not necessary to encourage the development of cogeneration or other qualifying facilities. Allowing utilities to negotiate the purchase price will protect the electric consumers and still allow the small power producers and cogenerators a fair return on their investment.

5. The present statutory provisions on interconnections protect electric utility systems and their customers from being damaged and should not be changed.

Before we proceed to discuss in detail these reasons for opposing the bill, a brief review of our Company's efforts to develop alternate and renewable energy resources will be provided since it is our experience with such development that dicates our opposition to the substitute bill.

II. SOUTHERN CALIFORNIA EDISON COMPANY'S COMMITMENT TO ACCELERATED DEVELOPMENT OF ALTERNATE AND RENEWABLE ENERGY SOURCES.

Our corporate mission is to provide safe, reliable, and efficient electric service to our customers at fair prices while providing a fair and reasonable return to our shareholders. Throughout its history Southern California Edison has recognized that in order to accomplish this mission we must find innovative solutions to the challenges presented by the changing world in which we live. This innovative approach is evidenced by our participation in the installation in 1886 of the first commercial water powered electric plant in California and, most recently, the construction and operation of the world's largest central receiver solar power plant.

For the 1980s the Company recognizes the value of alternate and renewable energy resources as a means of establishing a cost effective energy strategy for the benefit of our ratepayers and shareholders. Beginning in October 1980, we dedicated a substantial share of our future energy resources to renewable and alternate forms of energy production.

Mr. William R. Gould, Southern California Edison's Chairman of the Board, notified all employees, "it is the policy of Edison to devote our corporate resources to the accelerated development of a wide variety of future electrical power sources which are renewable rather than finite. These include wind, geothermal, solar, fuel cells, small hydroelectric, and continued emphasis on cogeneration, conservation and load management." The press release accompanying his announcement is attached as Exhibit "A". Prior to this announcement, we projected that renewable and alternate energy projects would constitute about 14% of our new generating resources. Based upon our success in developing these resources since the 1980 commitment, we now expect 40% of additional resources to be alternate or renewable. Chairman Gould's directive for the future, our commitment to the development of renewable and alternate resources, is rapidly becoming a reality.

Some of the specific alternate and renewable resource projects we have operating, under construction or planned are:

Wind power: We have signed contracts or letters of intent with entrepreneurs/developers for projects totalling about 130 MW of power. In addition the Southern California Edison Company has an experimental large wind generator at our Wind Energy Center near Palm Springs in the California desert. It has three 85-foot blades, mounted on top of a 110-foot tower. Vertical axis wind turbine generators will soon be added at the Wind Energy Center.

Our accelerated efforts to develop wind projects commenced with our Wind Project Opportunity Announcement (a copy is attached as Exhibit "B"). This announcement solicited wind project proposals and sets forth our criteria and the information needed for the consideration of proposed wind projects. Our intention was, and is, to simplify the presentation and expedite the review process for any proposed wind project.

Cogeneration: Cogeneration is electrical generation in conjunction with an existing industrial process. Cogeneration conserves valuable fossil fuel resources by either (i) utilizing waste energy from industrial processes to generate electric energy or (ii) utilizing waste heat from electric energy generation for industrial processes. In our opinion cogeneration has the greatest potential of the "new" sources in Edison's area.

Attached is a copy of a Company brochure (Exhibit "C"), which is provided to anyone interested in the development of cogeneration. Whether it be a university which consumes the energy produced on-site, or a large industrial firm which sells its excess energy production to Edison, we are always available to help in the development of these resources. We suggest you review this material since it is informative and educational and helps explain the complex subject of cogeneration technology.

Solar power: The 10 MW Solar One facility is the world's largest central receiver solar power plant. The sun's energy is gathered by a field of almost two thousand mirrors, covering nearly 100 acres. Directed by computers, the mirrors track the sun to focus heat on a tower-mounted boiler. Steam is transferred to the ground to drive a conventional steam-turbine electric generator. Preliminary engineering is now underway for a solar steam plant, "Solar 100", which would be about ten times the size of the original. Edison recently signed agreements for a 10 MW parabolic trough solar facility and for a 1 MW photovoltaic facility.

Geothermal Power: A 9 MW geothermal plant is in operation and another is under construction. Approximately 60 MW are under contract or letter of intent, with an additional 50 MW being developed by Edison. High salinity brines which scale, corrode and clog piping is a technological problem which, once solved, will allow development of additional geothermal energy. The potential production of geothermal energy is enormous.

Hydro: One of the oldest sources of electric power is once again playing an important part in Southern California Edison's resource plans. Until recently it had been presumed that all hydro sites large enough to be economically feasible had already been developed. However, as oil prices skyrocketed, more and more marginal and sub-marginal hydro areas began to look economically attractive. Currently we have firmed up approximately 450 MW of large and small hydro projects of which 200 MW will be developed by third parties. These projects are in varying stages of construction or planning.

Fuel Cells: Fuel cells are a potential power source which is highly efficient, lend themselves to modular construction, and produce extremely low emissions in the atmosphere. Our goal is 55 MW from fuel cells by 1990. Southern California Edison is actively participating in industry efforts to develop fuel cell technology.

Our aggressive efforts to develop these alternate and renewable resources are succeeding. Southern California Edison utilizes eight primary energy resources, -- oil, natural gas, coal, hydro, nuclear, wind, geothermal, and solar -- more than any other electric utility in the world. However, our efforts will be undermined if the costs to our ratepayers are unnecessarily increased by legislation that imposes mandatory full avoided cost payments for purchases from cogenerators and small power producers.

III. PURPA AVOIDED COST PROVISIONS

The Public Utility Regulatory Policies Act of 1978, as amended, (PURPA) was enacted by Congress to encourage the development of cogeneration and small power production and thereby reduce the nation's reliance on expensive foreign oil.

In enacting Section 210, the so-called "avoided cost" provision, Congress sought to provide the qualifying facility with a market and an appropriate rate for its output, nondiscriminatory rates for utility services, and minimization of regulation as a public utility. To this end Section 210, among other things, requires the Federal Energy Regulatory Commission

(FERC) to prescribe rules which require each electric utility to offer to purchase electric energy from any qualifying facility and to provide backup power and other services on a nondiscriminatory basis. In addition Section 210 requires FERC to prescribe rules to exempt certain qualifying facilities in whole or in part from the Federal Power Act, the Public Utility Holding Company Act, and state laws respecting rates and the financial or organizational regulation of electric utilities if FERC determines such exemption is necessary to encourage cogeneration and small power production. The states are charged with implementing FERC's rules.

Most important to our discussion is the congressional mandate that purchase rates balance the interests of the electric consumer, the public, and the qualifying facility. More specifically, purchase rates from qualifying facilities are to (i) be just and reasonable to the electric consumers of the electric utility, (ii) be in the public interest, (iii) be nondiscriminatory, (iv) not be in excess of full avoided cost, and (v) encourage cogeneration and small power production. According to the Conference Report on the Public Utility Regulatory Policies Act, H.R. Rep. No. 1750, 95TH Congress, 2d session, p. 97 (1978), the phrase "just and reasonable" is to be interpreted in a manner which protects the interests of the electric consumer in receiving electric energy at equitable rates.

In the Report, (p. 98), Congress makes clear that a just and reasonable standard is to be adopted.

> "The utility would not be required to purchase electric energy from a qualifying cogeneration or small power production facility at a rate which exceeds the lower of the rate described above, namely a rate which is just and reasonable to consumers of the utility, in the public interest, and nondiscriminatory, or the incremental costs of alternate electric energy [full avoided cost]. This limitation on the rates which may be required in purchasing from a cogenerator or small power producer is meant to act as an upper limit on the price at which utilities can be required under this section [PURPA, Sec. 210(b)] to purchase electric energy."

However, FERC's rule, (18 CFR 392.304(b)) ignores the mandate to balance interests and substitutes the full avoided cost limitation for the just and reasonable standard. The detrimental effect of FERC's rule is discussed in Section VI.

IV. PURPA LITIGATION

In implementing PURPA, the FERC issued regulations that required electric utilities to pay full avoided cost to qualifying facilities. Section 292.304(b)(2) of FERC's rules provides in part:

> ". . . a rate for purchases satisfies the requirements of paragraph (a) of this section if the rate equals the avoided costs determined after consideration of the factors set forth in paragraph (e) of this section."

Recently, the U.S. Court of Appeals for the District of Columbia in American Electric Power Service v. FERC, No. 80-1789, January 22, 1982, ruled that FERC, by setting all purchases at the maximum full avoided cost rate, ignored the congressional mandate that the price should be just and reasonable to the electric consumers and in the public interest. The court stated:

> "By ordering that the purchase rate be equal to the full avoided cost in every case, FERC has, without convincing explanation, simply adopted as a uniform rule the maximum purchase rate specified in the statute. Congress made a clear distinction between a "just and reasonable" rate and a rate based on the full avoided cost, though the two _may_ coincide. It has long been held that the essence of the just and reasonable standard is a balancing of the interests of the affected parties." _Id_. at p. 11.

The Court further noted that:

> "[S]ection 210(b) . . . seeks to strike a balance among the interests of cogenerators, 'electric consumers of electric utilit[ies],' and the 'public interest.' FERC should allocate the benefits more evenly between the cogenerators and the utilities if the utilities can demonstrate that, under a percentage of avoided cost approach, an allocation less heavily favoring the cogenerators is in the public interest and the interest of the utilities' electric consumers, and will not disproportionately discourage cogeneration." _Id_. at p. 13.

The Court in _American Electric Power_ also struck down the FERC regulation requiring interconnections with qualifying facilities without following the procedural and substantive safeguards set out in PURPA Sections 202 and 204, which are now Sections 210 and 212 of the Federal Power Act.

The United States Supreme Court has been asked to review _American Electric Power_. If the Supreme Court agrees to hear this case, it will be the second lawsuit involving PURPA to reach the Supreme Court.

The case of FERC v. Mississippi (No. 80-1749) was argued before the Supreme Court on January 19, 1982. The Federal District Court held, inter alia, that Section 210 of PURPA, which contains the provisions on cogeneration and small power production, improperly intrudes upon State sovereignty in violation of the Tenth Amendment to the U.S. Constitution.

V. CONGRESS SHOULD NOT AMEND PURPA UNTIL THE LITIGATION IS RESOLVED

With the ultimate outcome in both American Electric Power Service v. FERC and Mississippi v. FERC unknown, we believe that any amendments to PURPA are premature. At this time, it cannot be determined whether, and to what extent, new legislation may be required once final decisions are rendered.

New developments may occur in both cases shortly if the Supreme Court acts on them before its term ends in June, 1982. In the event the Supreme Court determines not to hear American Electric Power Service v. FERC, then Congress' choice is clear--either enact new legislation (which would undoubtedly require new FERC rulemaking) or leave PURPA intact while FERC issues new rules on avoided cost.

It must be emphasized that the American Electric Power decision resulted from erroneous or deficient administrative agency rulemaking. There is nothing wrong with the pricing criteria provisions of Section 210 of PURPA or the interconnection provisions of PURPA Sections 210 and 212. What is needed now is prompt rulemaking by FERC which implements Congress' intent (i) that pricing under PURPA balance the interests of electric consumers, qualifying facilities, and the public and (ii) that FERC interconnection orders be governed by adequate safeguards for the safety, integrity and reliability of electric utility systems. Such rulemaking will best serve Congress' desire to promote the development of alternate and renewable resources.

Efforts to enact new legislation detract attention from the need for action by FERC to properly implement PURPA and can only lead to renewed political battles. If legislation is enacted now, new rulemaking and court challenges can be expected which would further postpone the time when we can proceed to concentrate our efforts on developing the alternate and renewable resources.

With respect to the Mississippi v. FERC case, when the Supreme Court makes its decision, the manner in which the United States can regulate sales of electric power at wholesale will be clarified. If the Supreme Court upholds PURPA's approach, then there will be no constitutional reason for any changes. If the Supreme Court agrees with the District Court that PURPA's regulatory approach violates the Tenth Amendment to the U.S

Constitution, then the opinion should provide guidance on how Congress may restructure PURPA. To proceed with such a restructuring in advance of the Supreme Court's decision may only result in the passage of legislation which retains constitutionally impermissible approaches.

VI. DETRIMENTAL IMPACTS OF MANDATING FULL AVOIDED COST PAYMENTS

Southern California Edison has successfully executed with independent power developers approximately 60 contracts or letters of intent totaling about 1,000 megawatts, nearly all of which have been negotiated at a rate below full avoided cost. (See Exhibit "D"). The substitute bill would seriously undermine negotiations between the qualifying facility and the electric utility to the detriment of the electric consumer, the facility, and the utility.

The electric consumer would be hurt because he would not receive the benefit of a rate negotiated at less than full avoided cost. Our calculations indicate that if the ability to negotiate rates were retained, savings to our electric consumer, as of 1990, would amount to approximately $100 million if contracts were negotiated at a rate of 90% of full avoided cost, and to around $200 million, if at 80% of full avoided cost. (See Exhibit "E"). Although the argument has been made that an electric utility should pay full avoided cost because this payment reflects costs that the utility would otherwise incur, it fails to provide the electric consumer with any of the benefits that are derived from cogeneration or small power production.

In those states where avoided cost is tied to the most expensive fuels, the electric consumer is not likely to see relief from escalating fuel prices no matter how low the cost of energy from alternate and renewable resources may become. Costs are not likely to reflect the lower costs that evolve from improved technology. Locking the consumer into the highest possible price would be like pricing electricity according to the cost at Thomas Edison's Pearl Street Station or to freezing the price of the transistor radio to the costs in the 1950's.

The qualifying facility would be hurt because the negotiation of price terms in exchange for utility expertise or assistance would be seriously curtailed if not actually eliminated.

Although the qualifying facility would receive payments based on the electric utility's full avoided cost, he would be forfeiting benefits which could be gained from negotiating. Generally, and as our experience indicates, a qualifying facility is willing to accept a lower price in exchange for our providing land, siting and permit support, project management, pricing guarantees, financial analysis, technical consultation and expertise, or resource insurance. As an example, for facilities using technologies near commercial maturity and availability, such as cogeneration, we have provided feasibility analysis and technical consultation. In addition, negotiation encourages utility participation and contribution which, in turn, may reduce the qualifying facility's capital requirements, lower interest rates, lower risk and exposure, assure a more uniform cash flow, and assist in the securing of necessary financing and permits. Finally, utility participation may also provide the expertise needed to bring facilities on-line in a timely manner.

The electric utility would be hurt because its stewardship efforts on behalf of its customers would be severely hampered. The electric utility would be impeded from satisfying its stewardship responsibility to minimize costs consistent with providing adequate service. If a qualifying facility realizes a fair return consistent with the risks, the electric consumer should pay no more. For a utility to accept premium costs would be an abdication of its responsibility.

We want to emphasize that only the consumer benefits from these less than full avoided cost contracts. The utility does not gain a profit. Because purchase power costs are passed through to the electric consumer, if costs are reduced, it is the consumer who benefits.

Not only would mandatory payment of full avoided cost hurt the electric consumer, the qualifying facility, and the electric utility, it is not essential, as our track record indicates, to the development of cogeneration and small power production. In addition, it would hinder the operation of market forces.

Our experience demonstrates that a purchase price can be negotiated while still providing sufficient encouragement for the development of cost effective qualifying facilities. The Court in the American Electric Power case recognized that negotiation and consideration of market forces stimulate competition, and ultimately reduce costs to the consumer.

The Court at pages 14-15 states that

> "... but for FERC's regulations the utility may have paid a [qualifying facility] a market purchase rate of something less than the full avoided cost, under a standard industry practice. Since a rate which is below full avoided cost, but still above the [qualifying facility's] cost, could suffice to induce cogeneration [and small power production], a full avoided cost rule would not be required to meet the statutory directive to encourage cogeneration [and small power production]. Thus, by requiring the payment of full avoided cost to any new cogeneration facility [or new small power production facility] (including those which would have been installed even though purchase rates are less than full avoided cost), the regulations could both fail to induce additional cogeneration [and small power production] and leave the utility and its customers worse off than they might otherwise have been."

Another major consideration in mandating full avoided cost payments is that computation of avoided cost is a complex matter and is not subject to uniform methodology. State regulatory agencies' calculations and criteria on avoided cost are sometimes at variance with PURPA, FERC regulations and the electric utility's planning and operating characteristics. This could result in a utility's having to pay costs in excess of those it actually avoids. Some of the factors which are responsible for these variations include:

1. The need to base prices for energy on energy purchases and all fuels actually used.

2. The impropriety of paying for capacity in advance of need.

3. The impropriety of paying a capacity component for as-available energy. As-available energy does not allow an electric utility to defer or avoid installation of capacity resources and, consequently, does not avoid capacity costs. In addition, capacity payments are inappropriate if the electric utility has sufficient capacity with a prudent reserve margin.

4. The need to consider the manner in which each electric utility would respond to a shortage, such as energy purchases in the short term and replacement or refurbishment of existing oil/gas fired generation or forecasted utility response to load changes in the long term, when capacity payments for as-available energy are based on shortage costs.

5. Recognition that long-term energy price commitments for avoided energy cost payments do not reflect the volatility of the energy market.

6. The need to consider a qualifying facility's ability to satisfy performance standards in setting the value of capacity. 18 CFR 292, 304(e) set forth 11 criteria to be considered in determining purchase rates, including dispatchability, reliability, availability in emergency, and coordination of scheduled outages.

VII. INTERCONNECTION

The substitute bill would give FERC the discretion to exempt qualifying facilities from the interconnection provisions of PURPA, which are designed to provide both substantive and procedural safeguards to protect an electric utility's system from damage or degradation. The pertinent interconnection provisions and the rules issued by FERC were succinctly summarized in the American Electric Power decision:

> "FPA section 210(c) provides that the Commission may issue an interconnection order with respect to a qualifying cogenerator only if the interconnection is in the public interest; would encourage overall conservation of energy or capital, optimize the efficiency of the use of facilities and resources, or improve a utility

system's reliability; and meets the requirements of FPA section 212 that, inter alia, the interconnection is not 'likely to result in a reasonably ascertainable uncompensated economic loss' for any utility or cogenerator, will not place an 'undue burden' on any party, will not 'unreasonably impair the reliability' of the utility, and will not 'impair' the utility's ability 'to render adequate service to its customers.' FPA section 210(b) provides that the Commission is to give appropriate notice and afford an evidentiary hearing before issuing any such order, and FPA section 212 contains certain specific financial and procedural protections for the party ordered to interconnect (for these purposes, the utility). Section 210(a)(1) of the FPA, as added to and amended by PURPA, states:

> 'Upon application of any electric utility, Federal power marketing agency, qualifying cogenerator, or qualifying small power producer, the Commission may issue an order requiring --
>
> '(A) the physical connection of any cogeneration facility, any small power production facility, or the transmission facilities of any electric utility, with the facilities of any such applicant ....'

"Finally, and most significantly, section 210(e)(3) of PURPA states:

> 'No qualifying small power production facility or qualifying cogeneration facility may be exempted under this subsection from --
>
> . . . .
>
> '(B) the provisions of section 210, 211 or 212 of the Federal Power Act . . . or the necessary authorities for the enforcement of any such provision of the Federal Power Act....'

"Against this statutory background, FERC promulgated rule 292.303(c)(1), which reads:

> '292.303 Electric utility obligations under this subpart.
>
> . . . .

> '(c) Obligation to interconnect.
>
> '(1). . . [A]ny electric utility shall make such interconnections with any qualifying facility as may be necessary to accomplish purchases or sales under this subpart.'" (p. 23-24).

The Court in American Electric Power then stated:

> "By requiring '*any*' utility to make interconnections with '*any*' cogenerator FERC designates, the Commission would in effect exempt qualifying cogenerators from the other procedural and substantive requirements discussed above in FPA sections 210 and 212, and deprive utilities of the safeguards afforded by those provisions." (p. 25).

The substantive safeguards established in PURPA are of vital importance. Failure to adhere to them could lessen the reliability of an electric utility's system, increase the possibility of instabilities, make voltage control ineffective and endanger human safety. For example, without adequate protection, utility personnel could be injured or killed if a transmission line from a qualifying facility were to be energized when utility personnel, understanding the line to be closed at the qualifying facility, open the line at the substation breaker to conduct maintenance.

As can be seen from this example, the dangers involved are real. The precautions necessary to protect the utility system and personnel from improper interconnections are described in a brochure attached as Exhibit "F".

VIII. DELEGATION OF FEDERAL REGULATORY AUTHORITY TO THE STATES

Traditionally, sales of electric power at wholesale have been subject to exclusive Federal regulation. In several key areas, this substitute bill would delegate federal regulatory authority to the respective state regulatory agencies without providing sufficient guidelines or standards which the state agencies must adhere to.

The states could ultimately determine:

(1) the price - whether below, at, or above avoided cost - which electric utilities must pay for power purchased from cogenerators and small power producers;

(2) the terms for interconnection of an electric utility's system with a cogeneration or small power production facility; and

(3) the extent, if any, to which electric utilities could have an ownership interest in cogeneration or small power production facilities.

We believe that unequal and inconsistent implementation of the federal principles will result. Such a result, when combined with the complex interplay of federal and state responsibilities established by the bill, would create confusion and would probably lead to further litigation.

This would further delay the time when there is a stable regulatory environment in which utilities and qualifying facilities could work together more effectively to achieve the original intent of PURPA -- to encourage the development of alternate and renewable resources consistent with the interests of the electric customer and the public.

IX. ADDITIONAL SPECIFIC COMMENTS ON THE SUBSTITUTE BILL

A. Although Southern California Edison believes that legislation regarding avoided cost should not be enacted at this time, any such legislation should reiterate the need to balance the interests of the electric consumer, the qualifying facility, and the public. In addition, such legislation should recognize the right of electric utilities and qualifying facilities to negotiate freely with one another. Such legislation should also recognize the factors (e.g., availability and reliability) which affect the price a qualifying facility is to be paid by an electric utility for energy and capacity.

B. The bill retains a federal limitation on the extent of electric utility ownership of small power production facilities while eliminating such a limitation with respect to cogeneration facilities. This difference in treatment would further complicate the regulatory scheme. The reason for the differing treatment is unclear.

C. Section 3(b)(1) could be construed as permitting only one rate for the purchase of electricity that cannot be reduced to take into account such variables as the dispatchability, availability, reliability and usefulness of capacity and energy from a specific qualifying facility.

D. Section 3(b)(2)(B) should be clarified to ensure that a state agency cannot limit the right of an electric utility and a qualifying facility to enter into a freely negotiated contract.

E. The substitute bill appears to raise questions that relate to the difficult, complex problems involved in any potential deregulation of the electric utility industry.

For the reasons set forth in this statement, Southern California Edison Company opposes this substitute bill. The Southern California Edison Company appreciates this opportunity to present its views. Thank you.

EXHIBIT A

From
Southern California
Edison Company

FOR RELEASE: 9 a.m. Friday, Oct. 17, 1980

EDISON ANNOUNCES MAJOR POLICY SHIFT TO RENEWABLE ENERGY SOURCES

Southern California Edison Company today announced a major change in corporate policy regarding the sources of future electricity for its customers.

William R. Gould, SCE board chairman and chief executive officer, declared "it is the policy of Edison to devote our corporate resources to the accelerated development of a wide variety of future electrical power sources which are renewable rather than finite." These include wind, geothermal, solar, fuel cells, hydroelectric, and continued emphasis on co-generation, conservation and load management.

"As a result of some significant successes in a number of research and development areas, the company now believes that some forms of power generation which a few years ago were speculative or unproven have progressed to the point that they can be aggressively developed and relied upon to provide a significant part of the electricity to supply the additional needs of our customers later this decade," he declared.

Gould emphasized that the San Onofre Nuclear Generating Station Unit 2 and 3 projects, now about 90 per cent completed, and Palo Verde Nuclear Units 1, 2 and 3 in Arizona, now approximately 50 per cent completed, will be other major resource additions to meet customer demands during this period.

Gould said Edison's policy shift to emphasize renewable sources should improve the environment and reduce dependence on expensive foreign oil.

"We are convinced that our society in general, our customers and our company will benefit from the success of renewable and alternate energy sources," Edison's chief executive stated.

"Southern California Edison has been and is committed to continue to be a leader in the accelerated development of these forms of energy," Gould declared.

Renewable and alternate energy sources in the company's new plans for the 1980-90 time frame include increased amounts of wind, geothermal, solar (photovoltaic and thermal), fuel cells, hydroelectric, and continued and increased emphasis on co-generation, conservation and load management.

Work also will continue on some of the more exotic energy forms--for example, magnetohydrodynamics (MHD), nuclear fusion, solar ponds, coal gasification and ocean thermal energy--but they are not considered far enough advanced in technological development yet to be regarded as firm parts of SCE's resource plan.

"We are optimistic that these renewable and alternate energy sources can provide a significant amount of future resources--perhaps to about 30 per cent. Consistent with our obligation to serve our customers' electricity needs, we must retain the option to continue to pursue conventional power generation resources as well, such as Allen-Warner Valley and Cal Coal, in the event that these promising renewable and alternate sources are delayed in fulfilling the promise that they hold," Gould said. "We are also pursuing off-system purchases. One example is 300,000 kilowatts of Mexican geothermal," he added.

In the early 1970s, Edison projected a load growth of 11,000,000 kw for the decade of 1980. With anticipated success on conservation and load management, the figure has been reduced by about 5,000,000 kw. This leaves 6,000,000 kw of generating capacity necessary to serve projected customer needs for the 1980s.

The company's present electricity generating resource plan calls for about 14 per cent, or 800,000 kw, to be obtained from renewable or alternate sources. "Under our announced program today, we have more than doubled the present amount and Edison has set a new goal of about 30 per cent, or 1,900,000 kw, of its anticipated 6,000,000 kw of additional generation needs in 1990 from renewable and alternate sources," the SCE chairman said.

Edison's new goal for electricity generating resource additions include 120,000 kilowatts of wind power, 420,000 kw of geothermal, 310,000 kw of solar, 130,000 kw from fuel cells, 300,000 kw of co-generation and 620,000 kw of hydroelectric generation. Further, it is anticipated that this alternate and renewable resource program will ultimately reduce the level of capital expenditures for system additions.

Gould explained these kilowatt amounts are firm generating capacity numbers. "But when you recognize the intermittent nature of some of these sources (wind doesn't blow all the time), we will actually add to the electric system a greater amount of generating capacity in order to achieve the firm kilowatts needed," he said.

In order to have 120,000 kw of firm, reliable generating capacity from wind, it requires a wind generating capacity installation of about 360,000 kw, or three times as much, Gould explained. This is because wind, and some of the other alternate and renewable sources, will not be available 100 per cent of the time.

With respect to co-generation, he said, it will require actual installation of about 1,000,000 kw to have a firm capacity of 300,000 kw.

Co-generation produces process energy and electric energy for the industrial co-generator. The availability of surplus electricity from co-generation is dictated by the industrial process requirements. Therefore, Edison receives the surplus or makes up the deficiency from the co-generation unit.

"These are major increases in our commitment to renewable or alternate energy," Gould stated, "and we as a company are pledged to work toward the achievement of these goals."

-SCE-

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EXHIBIT B

WIND PROJECT OPPORTUNITY ANNOUNCEMENT (WPOA)

A NOTICE INVITING EXPRESSIONS OF INTEREST FOR THE SUPPLY OF ELECTRICAL ENERGY PRODUCED BY WIND PARKS

WPOA SD 80-71

Southern California Edison Company
2244 Walnut Grove Avenue
P.O. Box 800
Rosemead, CA 91770

October 31, 1980

Closing Date for Receipt of Offers
Pursuant to this WPOA:
January 19, 1981, 4:30 p.m. - PST

WIND PROJECT OPPORTUNITY ANNOUNCEMENT (WPOA)

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WIND PROJECT OPPORTUNITY ANNOUNCEMENT (WPOA)

1. INTRODUCTION

Southern California Edison Company (Edison) is interested in the coordinated development of wind turbine generator parks as a source of electrical capacity and energy. This Wind Project Opportunity Announcement (WPOA) serves as a notice that Edison will entertain reasonable expressions of interest for supplying electrical capacity and energy from wind parks. Any organization is invited to submit offers for the sale of electrical energy generated from a proposer-provided wind park. For the purposes of this WPOA, a wind park shall be defined as a collection or grouping of wind turbine generators (WTG's) for the production of electrical energy.

A wind park should have a total rated capacity of at least 1 MW and consist of at least five (5) WTG's. Edison is specifically interested in the following categories: wind parks composed of small WTG's (WTG's having a nameplate rating of less than 150 kW each) and wind parks composed of large WTG's (WTG's having a nameplate rating of greater than 150 kW each). Offers will be evaluated within each category subject to state and federal regulations. One selection is anticipated for each category. However, Edison reserves the right to make multiple selections (or no selection) in each category.

The proposer is free to submit multiple alternate offers. However, offers meeting the suggestions of this WPOA are preferred.

Offers pursuant to this announcement must be submitted prior to the closing date for receipt of offers specified on the cover and should be firm and binding on the proposer for a period of not less than 120 days from the submittal due date. An offer may include a proposal of a cooperative venture under which both Edison and the proposer cooperate in a project. Whatever the amount of participation by Edison, the combined total cost to Edison for the electrical energy produced, will be an important evaluation criterion.

2. COOPERATIVE VENTURE

A proposer is encouraged to consider participating in a joint project with Edison. The proposer is invited to consider any cooperative venture ranging from the proposer (manufacturer, etc) supplying only the major hardware without ownership to the proposer developing and owning the complete wind park with only a minor contribution by Edison. Edison is willing to consider cooperating in areas such as providing land, electrical collector system, research aspects of wind energy, and other areas that the proposer may want to suggest.

3. TECHNICAL DATA GUIDELINES

3.1 Site Description - A proposer is free to locate the wind park anywhere within the Edison service territory. Exhibit A of the Appendix, showing typical wind data from the DOE tower near Devers Substation, is for informational purposes only.

Describe (using maps and photographs whenever appropriate) each proposed wind park location, projected wind regime, seismic zoning, and other pertinent information.

3.2 Characteristics of the Proposed WTG -Describe the technical and operational characteristics of wind turbine generators proposed, including

- Manufacturer and model, rating of the WTG, physical dimensions, and generator type.
- Estimated capacity factor, availability factor, power factor, harmonic content, annual energy output per WTG, and annual O&M costs.
- Spacing requirements, safety considerations, protection systems, stability and reactive power consideration, proposed safeguards against vandalism, and other pertinent information.

3.3 Environmental Considerations - Provide information, if appropriate to the proposal concept, on potential environmental impacts to the site and adjacent areas due to the installation and operation of the wind park.

The proposer should indicate who is to be responsible for complying with any applicable provisions of the National Environmental Policy Act, the California Environmental Quality Act, and obtaining any required state and local permits.

3.4 Management Plan -Provide a management plan with schedule and milestones for the project; methods of mitigation should the WTG's experience major problems; and, key personnel, their availability for the project, and the procedures that they would follow to fulfill the requirements of the project operation.

3.5 Division of Responsibilities - A proposer should outline the division of responsibilities between the proposer and Edison. Sufficient details should be given about Edison's responsibilities to enable Edison to estimate the costs of such participation, preferably in a form of fixed dollar commitment. A proposer should state in detail the basis of ownership of the completed wind park facility.

3.6 Research Elements - Due to the limited number of sites suitable for cost-effective WTG installations, and the need for better data on WTG technologies, proposers are encouraged to consider how they might incorporate R&D elements into their proposal, which elements would be designed to contribute to the state-of-knowledge concerning:

- Determination of the optimum spacing requirements between adjacent WTG's.
- Interspacing of large and small WTG's on the same wind park to maximize annual kWh output at the lowest cost.
- Design modifications of existing WTG's to improve their effectiveness.
- Mix of different WTG designs in a wind park to reduce wake phenomena and to maximize energy capture.
- Other R&D elements as appropriate.

The proposer should define the scope of Edison's involvement and estimated cost for such participation as outlined in Section 3.5 of the WPOA.

4. EVALUATION

Edison reserves the right to accept any, none, or all of the offers. Any proposal that is acceptable to Edison would result in the negotiation of a Power Purchase Contract or other appropriate Agreement that includes proposal elements found to be mutually satisfactory. The factors provided below will be considered in evaluating proposals. Programmatic and other factors will be used subjectively in the selection process.

4.1 The prime considerations in evaluating proposals will be the total estimated annual energy in kWh that will be produced by the proposed wind park, the attractiveness of the cost/sharing elements of the proposal, and the resultant overall cost to Edison of the electrical energy produced from the park.

4.2 The anticipated performance characteristics of the wind park, especially for those areas related to output stability, WTG life, capacity, effectiveness in land utilization, O&M costs and availability. Assumptions and methodologies used in the performance calculations will also be considered.

4.3 Technical, financial and environmental risks.

4.4 Likelihood that the proposing organization can and will adhere to its Proposed Management Plan including the ability to meet schedule requirements, financial, technical and management resources, and probability of success and benefits to Edison ratepayers.

4.5 Environmental characteristics that would be favorable to the program, including:

o Lack or mitigation of interference with transmission or reception of electromagnetic radiation and other interferences such as noise.

o Limited potential for a safety hazard to the general public.

o Lack or mitigation of potential environmental/ecological impacts caused by construction or operation of a WTG wind park.

4.6 Commitment - It is Edison's preference to obtain wind-generated electricity on a long-term basis. In its management schedule and plan, the proposer should provide specific approaches and procedures that will insure that the wind park would continue to operate throughout the length of the proposed contract.

4.7 Schedule - The proposer's schedule, its practicality, and compatibility to the Edison future resource requirements will be evaluated.

4.8 R&D Elements - Potential costs and benefits of the proposed R&D elements will be considered.

4.9 Attractiveness of the Offer - Scope and cost of Edison participation, attractiveness of such involvement to Edison ratepayers, physical implementation feasibility, the proposed contract duration, and availability of Edison resources for the project will be other programatic factors taken into consideration.

5. GUIDELINES FOR PROPOSERS

All proposals should be specific but concise (about 20 pages). Each proposal should have data summary sheets in the format given in Appendix B (Data Summary Sheets) placed within the first four pages of the proposal. A total of five (5) complete sets of proposals should be submitted prior to the closing date of this WPOA.

5.1 Instructions -

The proposal data and information needed to evaluate the project and organizations are included in Section 3 of this WPOA. It is important that proposers submit, as appropriate, the data and information requested in Section 3 in the indicated formats. Tables, maps and photographs are to be attached to the proposal, and copies of each should be included with each copy of the proposal.

5.2 Specific Proposal Information -

Each proposal should contain the following information:

- Name and address of the organization submitting the proposal.
- Names and telephone numbers of proposer's technical personnel whom Edison may contact during evaluation or negotiation.
- Type of organization (partnership, venture capital, financial institute, manufacturer, etc.).
- The information requirements set forth in Section 3 of this WPOA.
- Period for which proposal is valid (not less than 120 days from the due date of proposals).

5.3 General Proposal Information

5.3.1 Confidentiality and Disposal of Proposals - Information contained in the proposals will be held confidential by Edison. Three months after the selection procedure is completed, all copies of requested proposals will be destroyed.

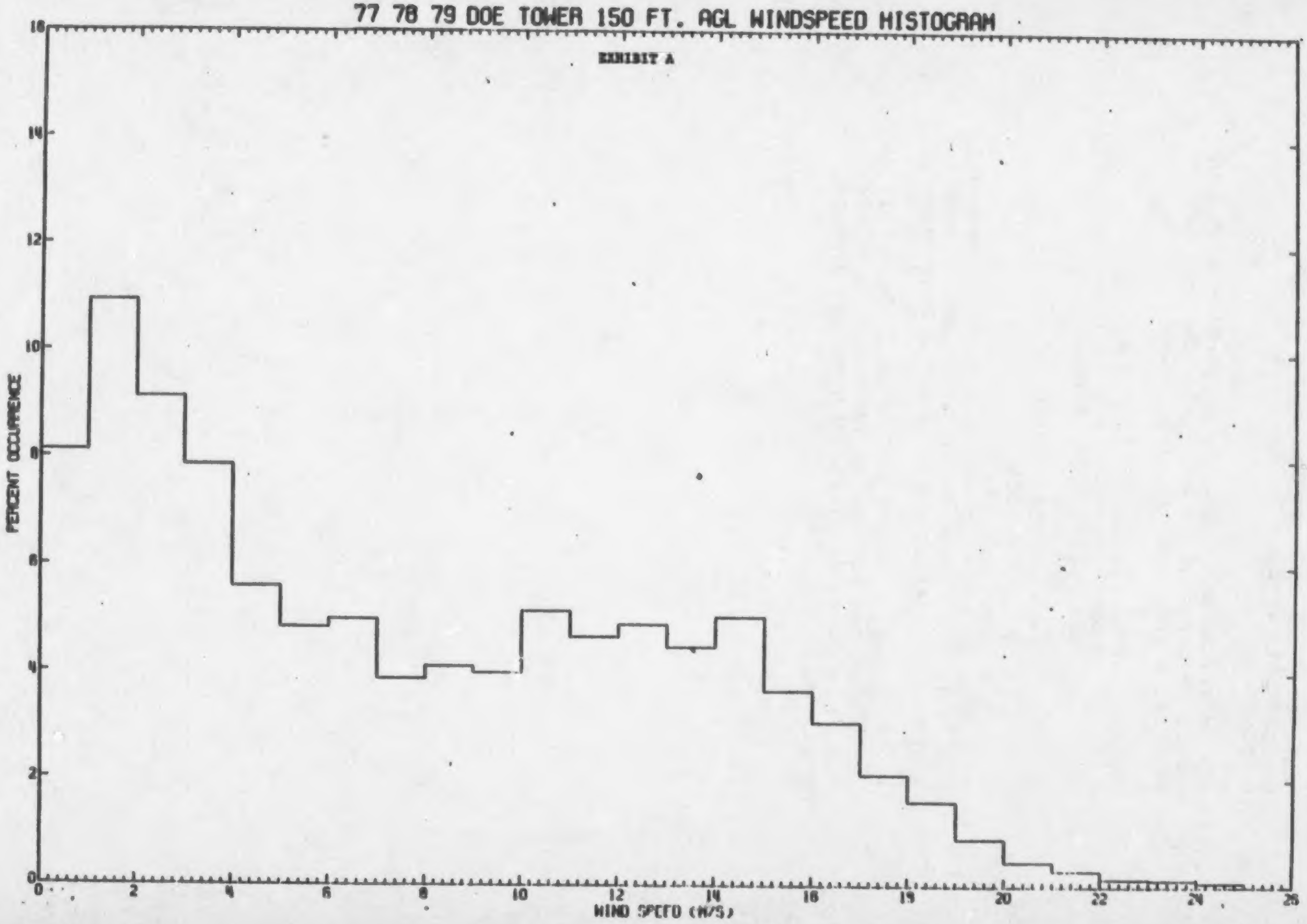
5.3.2 Proposer Representative -The proposer should furnish the names and telephone numbers of persons authorized to represent the proposer in contractual matters. This information should be placed conspicuously within the first two pages of the proposal.

5.3.3 All questions and inquiries concerning this WPOA should be directed to Mr. W. R. Granger, in writing, at the address given below:

Power Contracts Division
Room 468
2244 Walnut Grove Avenue
P.O. Box 800
Rosemead, CA 91770
(213) 572-2201

5.3.4 Intent to Submit - To assist Edison in preparing its review, advanced notice of intent to submit a proposal is desirable but is not a requirement.

5.3.5 Submit Offers To - All offers shall be submitted to the person and address as specified in subsection 5.3.3. A total of five copies of the proposal are requested.


77 78 79 DOE TOWER 150 FT. AGL WINDSPEED HISTOGRAM
EXHIBIT A
PERCENT OCCURRENCE
0
2
4
6
8
10
12
14
16
WIND SPEED (M/S)
0
2
4
6
8
10
12
14
16
18
20
22
24
26

APPENDIX A

TABLE 1 - WIND DATA TABLE FOR 1977 THROUGH 1979

WINDSPEED INTERVALS (M/S)*	FREQUENCY IN HOURS 1977	PERCENT OF OCCURRENCE 1977	FREQUENCY IN HOURS 1978	PERCENT OF OCCURRENCE 1978	FREQUENCY IN HOURS 1979	PERCENT OF OCCURRENCE 1979	TOTAL FREQUENCY 77/78/79	AVERAGE FREQUENCY 77/78/79	PERCENT OF OCCURRENCE 77/78/79
0.0 - 1.0	642	8.28	527	6.73	730	9.40	1899	633	8.13
1.0 - 2.0	927	11.96	786	10.03	838	10.79	2551	850	10.92
2.0 - 3.0	680	8.77	649	8.29	803	10.33	2132	711	9.13
3.0 - 4.0	633	8.16	593	7.57	610	7.85	1836	612	7.86
4.0 - 5.0	423	5.46	414	5.28	469	6.04	1306	435	5.59
5.0 - 6.0	342	4.41	374	4.79	410	5.28	1126	375	4.82
6.0 - 7.0	417	5.37	392	5.00	356	4.58	1165	388	4.99
7.0 - 8.0	228	2.94	288	3.68	388	4.99	904	301	3.87
8.0 - 9.0	260	3.35	337	4.30	362	4.66	959	319	4.11
9.0 - 10.0	264	3.41	292	3.73	373	4.80	929	310	3.98
10.0 - 11.0	394	5.08	412	5.26	395	5.08	1201	400	5.14
11.0 - 12.0	347	4.48	370	4.72	372	4.79	1089	363	4.66
12.0 - 13.0	348	4.49	447	5.70	349	4.49	1144	381	4.90
13.0 - 14.0	362	4.67	355	4.53	326	4.20	1043	348	4.47
14.0 - 15.0	449	5.79	466	5.95	261	3.36	1176	392	5.04
15.0 - 16.0	301	3.88	333	4.25	220	2.83	854	285	3.66
16.0 - 17.0	268	3.46	287	3.66	159	2.05	714	238	3.06
17.0 - 18.0	147	1.89	219	2.80	120	1.54	486	162	2.08
18.0 - 19.0	141	1.81	147	1.88	82	1.06	370	123	1.58
19.0 - 20.0	91	1.17	63	.80	56	.72	210	70	.90
20.0 - 21.0	53	.68	24	.31	31	.40	108	36	.46
21.0 - 22.0	22	.28	24	.31	23	.30	69	23	.30
22.0 - 23.0	3	.04	16	.20	17	.22	36	12	.15
23.0 - 24.0	9	.12	10	.13	12	.15	31	10	.13
24.0 - 25.0	2	.03	8	.10	8	.10	18	6	.08
TOTAL =	7753	100%	7833	100%	7770	100%	23356	7785	100%

* 1 METER/SECOND = 2.237 MILE/HOUR

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Exhibit B

Sample Data Summary Sheet

Title of Technical Proposal Summary Sheet

Cost Proposal Summary Sheet

Address of Organization

Type of Organization: ______________________

Authorized Officials

	Project Manager	Official Authorized to Negotiate for Proposer	Official Authorized to Obligate Proposer
Name			
Signature			
Title			
Date			
Telephone			

Partner (s) or Major Subcontractor (s)

Technical Proposal Summary Sheet

Title: ______________________________

Proposing Organization: ______________________________

No. of WTG's: ______________________________

Rating of each WTG: ______________________________

Total Land Required: ______________________________

Manufacturer(s) and Model(s): ______________________________

Project Annual kWh Output of the Wind Park: ______________

Proposer to Provide: ______________________________

____

Edison to Provide: ______________________________

____

Research Elements: ______________________________

____

Schedule: ______________________________

____

____

Cost Proposal Summary Sheet

Title of the Project: ______________________________

Proposing Organization: ______________________________

Estimated Total Project Capital Cost: $ ____________________

Estimated Total Edison Capital Cost: $ ____________________

Estimated Proposer Capital Cost: $ ____________________

Price To Be Paid by Edison:

Energy Cost: $ ________ Per kWh based on Actual Output

Capacity Cost: $ ________ Per kW per year based on actual performance or other arrangements

Other: $ ______________ (explain)

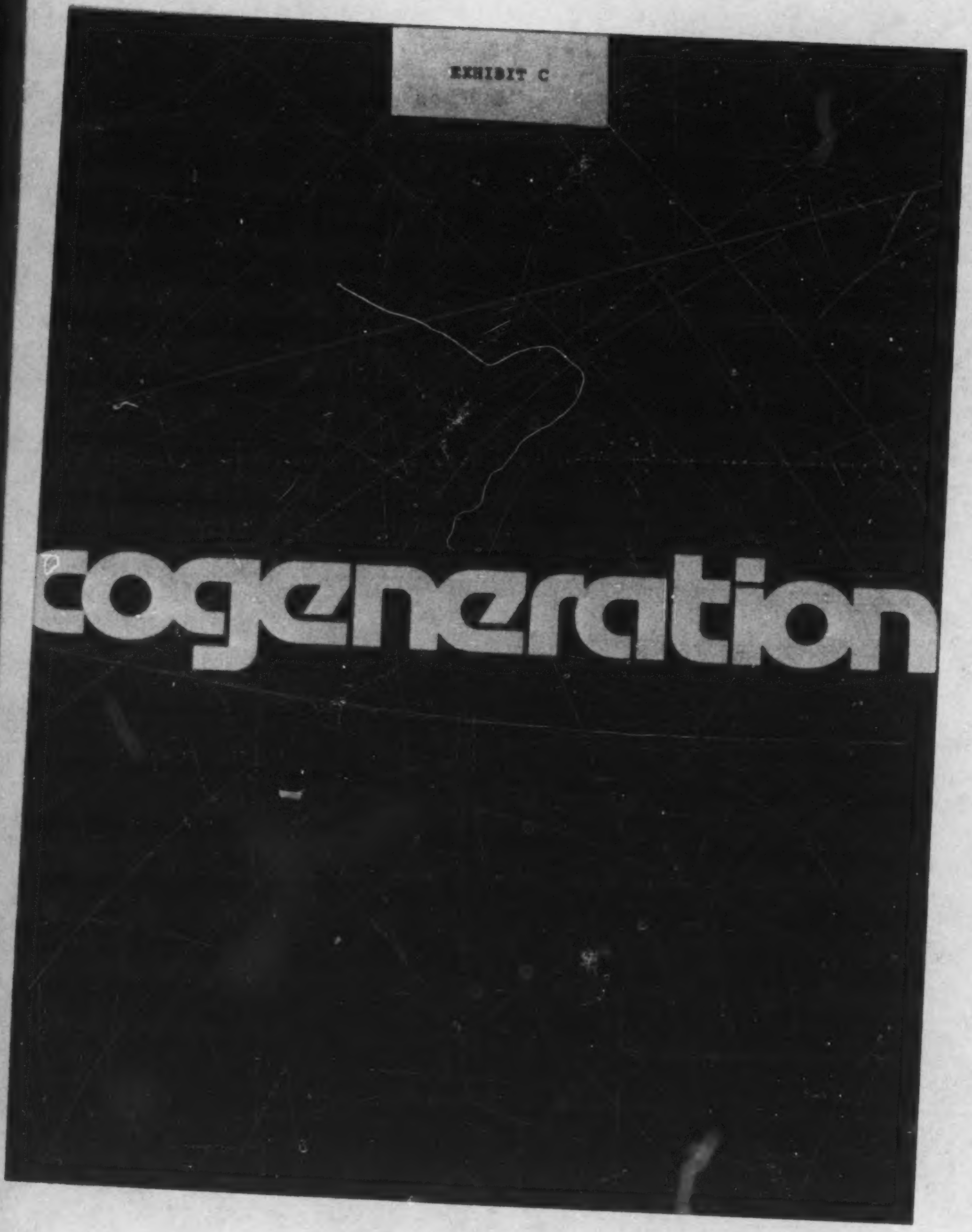

EXHIBIT C

cogeneration

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introduction

Ever think about building a power plant?

The high cost of energy today, coupled with several other factors, makes this an especially attractive time to consider building an on-site cogeneration facility.

Cogeneration is the use of a single fuel, such as natural gas or oil, to simultaneously produce two forms of energy, usually useful heat and electricity. This dual use of a fuel improves energy efficiency as compared to a facility which produces just one form of energy. The end result is less fuel is required to produce a given amount of energy, which could save you money.

There are several reasons why this pathway to energy efficiency should be considered:

1. Southern California Edison Company encourages cogeneration, and will assist in evaluating the potential of this technology at your plant.
2. Edison offers attractive power purchase rates that support the development of cogeneration and small power production, provide equitable treatment for Edison's ratepayers and take the public interest into consideration.
3. Applications for cogeneration vary widely. If you have use for both electricity and some form of heat, your facility has cogeneration potential. In addition to industrial plants, facilities such as schools, hospitals and shopping centers today are benefiting from cogeneration.
4. State and federal legislation approved during the past few years makes cogeneration more feasible for business and industry.

Edison encourages cogeneration for several reasons:

1. Cogeneration conserves energy through more efficient use of resources such as natural gas and oil.
2. Edison's new construction requirements are reduced as more firms build on-site power plants. A reduced construction program for Edison also lessens our need to raise capital, which results in savings to both Edison and its customers.
3. Cogeneration results in new electric power generation facilities coming on-line more expediently, when compared to the long lead times required to plan and construct a utility power plant. Cogeneration facilities often can start operating two or three years after they are first considered.

Edison & Cogeneration

Edison has worked with customers on cogeneration projects since 1965. Our goal is to have 1,000 megawatts of cogeneration installed and under contract within our service territory by 1990.

Our team of cogeneration engineers can assist you in evaluating your potential for using cogeneration. At your request, they also will discuss the type of electrical interconnection facilities required if you want to operate in parallel with the Edison grid. The engineering services we provide on interconnection, methods of service, voltage and related matters may save thousands of dollars in planning expenses.

This brochure provides the basic information needed to begin the serious consideration of cogeneration. Much of this information also applies to small power production. More detailed information about cogeneration, small power production and the difference between these two methods of producing energy may be obtained by calling Edison's Cogeneration and Small Power Projects Section at (213) 572-1419. We look forward to assisting you.

SOME LIKELY APPLICATIONS

Companies which use or produce large quantities of heat usually have a high potential for cogeneration. Since cogeneration plants produce electricity and some form of heat, there must be an on-site need for useful heat to make cogeneration feasible.

Traditionally, the types of industries which have shown the greatest potential for cogeneration are those involved in oil refining and production, chemical production, steel fabrication, food processing and pharmaceutical production. Hospitals also have potential for cogeneration.

Your firm may be an excellent candidate for cogeneration if it has:

– a high demand for process steam,
– a demand for direct heat,
– waste fuel materials available, or
– a high use of natural gas or boiler fuel.

The best time to consider cogeneration – from an economic standpoint – is when a large new commercial or industrial project is in the planning stages, or when an existing plant retrofit is under consideration.

FEDERAL AND STATE CONSIDERATIONS

Congressional passage of the Public Utility Regulatory Policies Act of 1978 (PURPA) was landmark legislation which made cogeneration projects more viable for commercial and industrial firms. Sections 201 and 210 of PURPA define a "qualifying facility" as one which meets certain thermal efficiency and ownership criteria.

PURPA also requires utilities to:

– purchase power from qualifying facilities
– provide standby power at reasonable rates
– allow parallel interconnection with the electric grid.

In response to PURPA, the Federal Energy Regulatory Commission issued Orders No. 69 and 70 in late 1979, requiring state utility regulatory agencies to implement guidelines based on PURPA.

Even before PURPA was approved by Congress, the California Public Utilities Commission (CPUC) was encouraging cogeneration.

In January 1978, the CPUC issued a resolution requiring utilities to publish their rates and policies for purchasing power from cogeneration and small power plant facilities. The CPUC also approved lower standby electric rates for such facilities.

In March 1981, the CPUC made it easier for potential cogenerators to obtain natural gas fuel by granting cogenerators a higher priority for purchasing supplies. This is especially significant because the state's environmental regulations make natural gas the most likely fuel for cogeneration plants.

These government actions, combined with the services Edison offers through its team of cogeneration engineers, provide you with several reasons to evaluate your potential for using cogeneration.

This introduction presented a brief overview on cogeneration. The remainder of this brochure contains more specific details about cogeneration systems, planning and financing, and the approval process. The following pages also explain where you can obtain additional information, and list some examples of successful cogeneration applications.

cogeneration

A. TYPES OF FACILITIES

There are two different types of cogeneration facilities, the topping cycle and the bottoming cycle. A topping cycle consists of first generating electric power, then using exhaust heat to produce useful thermal energy. A bottoming cycle involves first using the fuel to produce useful thermal energy for process use, then capturing high temperature waste heat to generate electricity.

1. Topping Cycle (Diagram on Page 8)

There are three basic kinds of topping cycles, cycles in which electricity is produced first and useful thermal energy afterwards: (a) gas turbine heat recovery, (b) steam turbine and (c) diesel engine systems. The high cost of diesel fuel and its pollution control problems make that approach generally uneconomical in California, so we will focus only on the gas and steam turbine approaches.

The most common type of cogeneration system in Edison's service territory is a topping cycle using a gas turbine with a heat recovery cycle. Natural gas, with fuel oil as a backup, is used as the fuel in a gas turbine to generate electricity. The normally wasted heat is recovered in a waste heat recovery boiler to produce process steam, or the gas turbine exhaust gases are used directly in a plant process.

A steam turbine topping cycle is similar to a conventional electric generation cycle which uses a boiler to produce steam for a steam turbine. The high-pressure steam first drives the steam turbine and generates electricity. Rather than condensing the exhaust steam, as in a conventional system, low-pressure steam is extracted to serve process heat requirements.

Sometimes a steam turbine can be used with an existing boiler, which reduces the expense for retrofit applications.

Steam turbines have a relatively low ratio of electricity production in comparison to steam output, and would be most applicable in situations where you have a large steam demand.

No matter what type of topping cycle you may decide upon, you also have the option of selecting a system with the capability of using more than one fuel. This will enable you to switch to another fuel in the event of a curtailment of the primary fuel supply.

2. Bottoming Cycle (Diagram on Page 9)

Bottoming cycle cogeneration systems, in which useful thermal energy is produced first and then electricity, can be designed in a variety of configurations.

They are most applicable in manufacturing plants where large amounts of exhaust heat are available, such as in cement production and similar high temperature processes.

The two basic kinds of bottoming cycle systems are steam and organic. A steam bottoming cycle captures waste heat rejected from an industrial process and uses it in a waste heat recovery boiler. The boiler's steam output passes through a turbine to generate electricity, and exhaust steam may also be available for industrial process applications.

Organic bottoming cycles heat a working fluid (such as Freon*, Fluorial* or toulene) until it is vaporized. The hot vapor drives a turbine generator to produce electricity, and the vapor is then condensed to liquid form and returned to the boiler to begin the cycle again. Organic Rankine Cycle systems are considered attractive for capturing relatively low-temperature waste heat from effluent fluid or gas streams which are normally released into the atmosphere.

Your choice of a system will depend on a number of factors, including electricity and thermal requirements, fuel availability and equipment costs.

*(Freon and Fluorial are products with registered trademarks.)

B. PLANNING A FACILITY

To assist you with your management decision-making process, you will want a complete feasibility study, including a detailed financial analysis. Preparing a feasibility study is your first major step toward a cogeneration facility, and will probably take from two to four months to complete, depending on the project's size. Key considerations which should be addressed in the study are outlined below:

1. Feasibility Study

Edison will assist you and your engineering staff with your feasibility study and will provide you with a list of qualified engineering consultants (including Edison's own Engineering and Construction Department) who are capable of carrying out thorough cogeneration studies.

Edison also offers at no cost to the customer a method of service analysis and cost estimate for interconnection equipment – essential elements of a feasibility and financial report.

At your request we will review any feasibility studies prepared for your company by outside firms, to assist you in making certain no concerns are overlooked.

A feasibility study should examine your company's potential for cogeneration, discuss the optimum size for a facility, and examine various configurations of equipment. An important aspect of the study, especially from your company management point of view, will be a financial analysis. Edison will assist you with your financial assessment through the use of our computer model for financial analysis.

The financial analysis should include explanations of any assumptions made, and information on how financial results will vary with different assumptions.

It is important to anticipate future energy cost increases when you compare the cost of generating your own energy through cogeneration with the expense for purchasing energy. Energy prices have risen substantially during the past few years, and will probably continue their upward trend.

If your project will have excess power to sell, consider Edison's offer to purchase power.

2. Selling Power to Edison

Edison will purchase electricity from cogeneration facilities. Prices offered are determined by several variables, such as when power is delivered to the Edison system, the reliability of the power supply and the length of the purchase contract.

Edison purchases power from cogenerators based on both energy delivered and the dedicated capacity when a firm commitment to provide capacity is made. When a capacity commitment is not feasible, payment is made for energy alone.

Energy payments are calculated according to time periods: on-peak, mid-peak and off-peak. Edison offers the highest energy payments when it has the greatest need for electricity, during the on-peak demand periods when overall customer use of power is heavy. (On-peak periods last from 1 p.m. to 7 p.m. in the summer, and from 5 p.m. to 10 p.m. in winter.)

Besides energy payments, Edison offers cogenerators capacity payments based on the amount of guaranteed output that will be delivered to the Edison grid. A cogenerator who signs a capacity contract agrees to provide Edison with a certain amount of kilowatt capacity per month. Payments are based on performance.

Lengths of cogeneration contracts involving dedicated capacity can range up to 30 years, with higher capacity purchase rates offered for longer contracts.

3. Interconnection

Interconnection facilities are necessary if you plan to operate in parallel with the Edison grid and sell power to Edison, or if you want Edison to provide standby power when your cogeneration facility does not meet all your power needs.

Our engineers will work with you to determine the specific type of electrical interconnection equipment you will need for your project.

The cogenerator pays for the costs associated with the design and installation of all electrical interconnection facilities. A monthly payment schedule can be arranged.

4. Operation & Maintenance

One area sometimes overlooked when a cogeneration project is being considered is operation and maintenance. Scheduled maintenance programs and periodic overhauls of steam and electric generation equipment help to prevent system shutdowns. If proper maintenance is carried out, a cogeneration system will seldom face equipment outages. This is because most cogeneration systems incorporate design characteristics which achieve high reliability. In certain instances, it may be desirable to retain Edison to operate and maintain the project.

C. FINANCING A FACILITY

1. Ownership Options

If your company decides to install a cogeneration system, there are several ownership options to consider. A cogeneration facility will usually be owned by the customer. But some projects, depending on a number of factors, may be owned by Edison, or jointly owned by both parties.

2. Depreciation and Tax Credits

Depreciation alternatives may affect the economical evaluation of your cogeneration project. The California legislature passed two measures late in 1980 that accelerate depreciation for cogeneration systems, Assembly Bills 1404 and 2893.

There are also federal tax laws relating to depreciation for equipment. A qualified accountant, tax attorney or the state and federal tax offices can apprise you concerning the latest tax rules for depreciation.

Federal credits also are available for certain cogeneration installations under the Energy Tax Act of 1978 and the Crude Oil Windfall Profits Tax. If you use alternative fuels or waste heat recovery boilers, you may be eligible for added federal tax credits beyond the basic investment tax credit. State tax credits may also be available. Again, it is advisable to consult tax experts to learn of the most recent tax credit regulations pertaining to cogeneration.

3. State Financing Assistance

Besides offering tax incentives for cogeneration, California's state government has programs to help finance cogeneration feasibility studies and assist in the financing of pollution control equipment.

Contact the California Alternative Energy Source Funding Authority, Post Office Box 1919, Sacramento, California 95809, for specific details on financing for qualifying cogeneration projects.

The California Pollution Control Financing Authority, a separate agency, can issue bonds to help finance the purchase of pollution control equipment for cogeneration facilities. Officials at the agency advise potential cogenerators to contact their office at the early planning stages of a project.

For details, write to:

California Pollution Control
Financing Authority
915 Capitol Mall, Suite 280
Sacramento, California 95814

Or call the Executive Director, at (916) 445-9597.

D. THE APPROVAL PROCESS

Once you make a decision to build a cogeneration facility, it will be necessary to apply for permits to construct and operate the facility.

1. Federal Fuel & Power Sales Laws

One of the first determinations will be the type of fuel your facility will require. Environmental regulations and present economics favor natural gas for cogeneration facilities in California.

The federal Powerplant and Industrial Fuel Use Act of 1978 places some restrictions on oil and gas fuels. However, some exemptions are available for cogenerators.

Current federal regulations provide that a cogeneration facility can sell 50 percent or less of its electrical output without being subject to regulation as a public utility.

Since federal regulations relating to cogeneration are subject to change, the Economic Regulatory Administration in Washington, D.C., should be contacted for information on current regulations and permit requirements.

2. The Siting Permit

No approval is needed from the California Energy Commission (CEC) for facilities with a capacity of less than 50 megawatts. If your planned cogeneration facility has a capacity of 50 megawatts or more, you are required to apply for siting approval from the CEC, and the approval process may take up to 12 months.

3. Air Quality Rules

Air quality permits also are necessary. Emission control requirements depend upon the type of facility planned, because accepted control technology varies with the type of cogeneration equipment used.

Depending on the size of your facility, you may also be required to provide emission offsets. In other words, if you build a cogeneration facility which emits certain contaminants in excess of regulatory limits, you must reduce emissions at your existing facilities or make agreements that result in lower emissions at other locations in the local Air Quality Management District or Air Pollution Control District to compensate for the emissions from your cogeneration plant. There are regulations which provide various alternatives for cogenerators.

Contact your local Air Quality Management District, the local Air Pollution Control District or the state Air Resources Board in Sacramento for details on these requirements and additional information on how to apply for air quality permits.

E. RESOURCES

1. State Congeneration Desk

A central state office can assist you in obtaining information about the various state permits required. The Governor's Office of Planning and Research includes a special Cogeneration Desk (916-322-8515) in its permit assistance section. We suggest you contact this office as you begin to apply for governmental permits.

2. California Energy Commission

To apply for a siting permit for cogeneration facilities with capacities of 50 megawatts or more, contact the California Energy Commission:

Office of Small Power Producers
California Energy Commission
1111 Howe Avenue, MS 66
Sacramento, California 95825
(916) 920-2494

3. Air Resources Board

The headquarters of the California Air Resources Board can provide you with information on air quality regulations and advice on appropriate emission-control equipment. (You can also contact your local Air Quality Management District or the local Air Pollution Control District, where you must obtain any required air quality permits.)

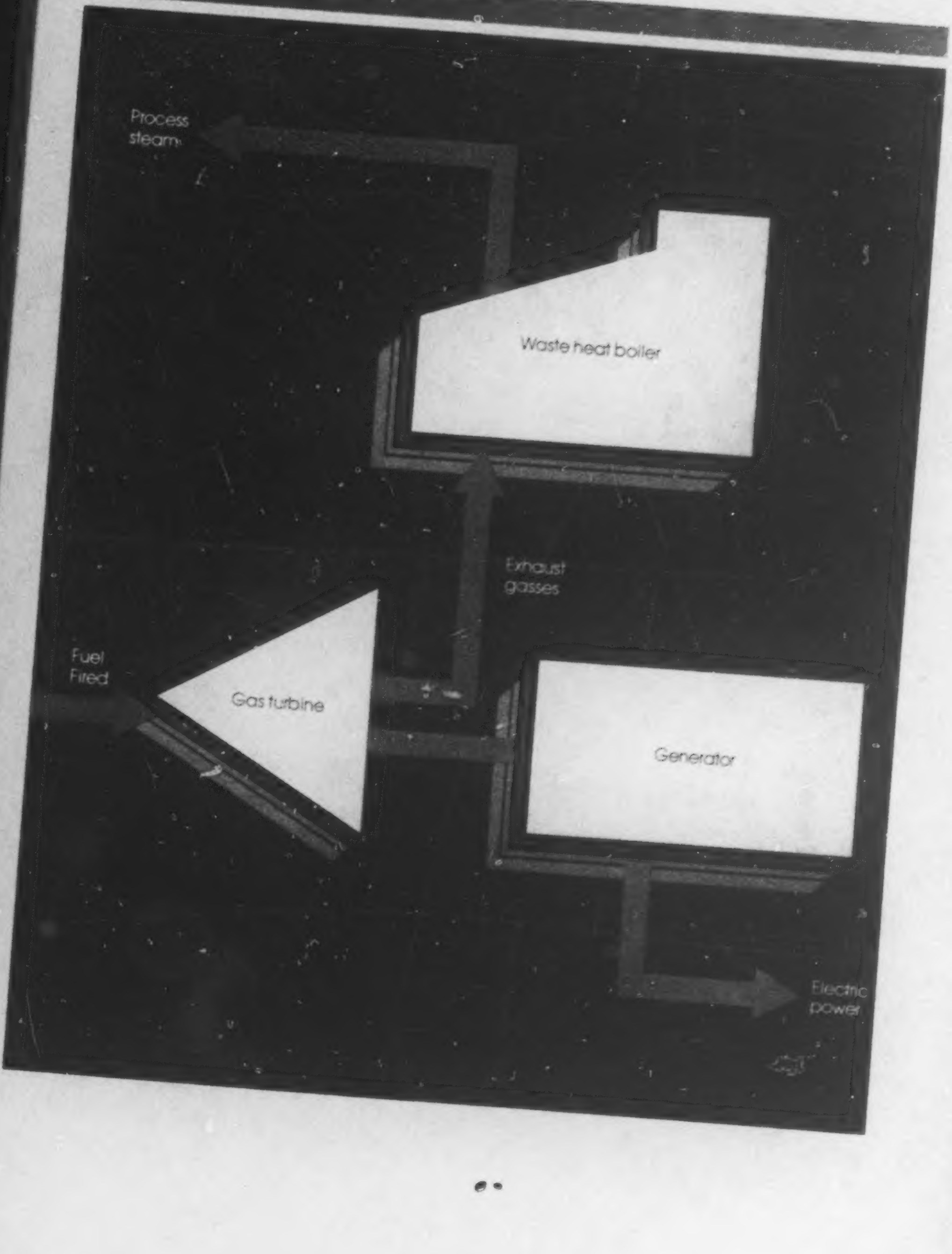
Write to:

California Air Resources Board (ARB)
Project Evaluation Branch
Stationary Source Control Division
1102 Q Street
Sacramento, California 95814

Or telephone (916) 322-6037.

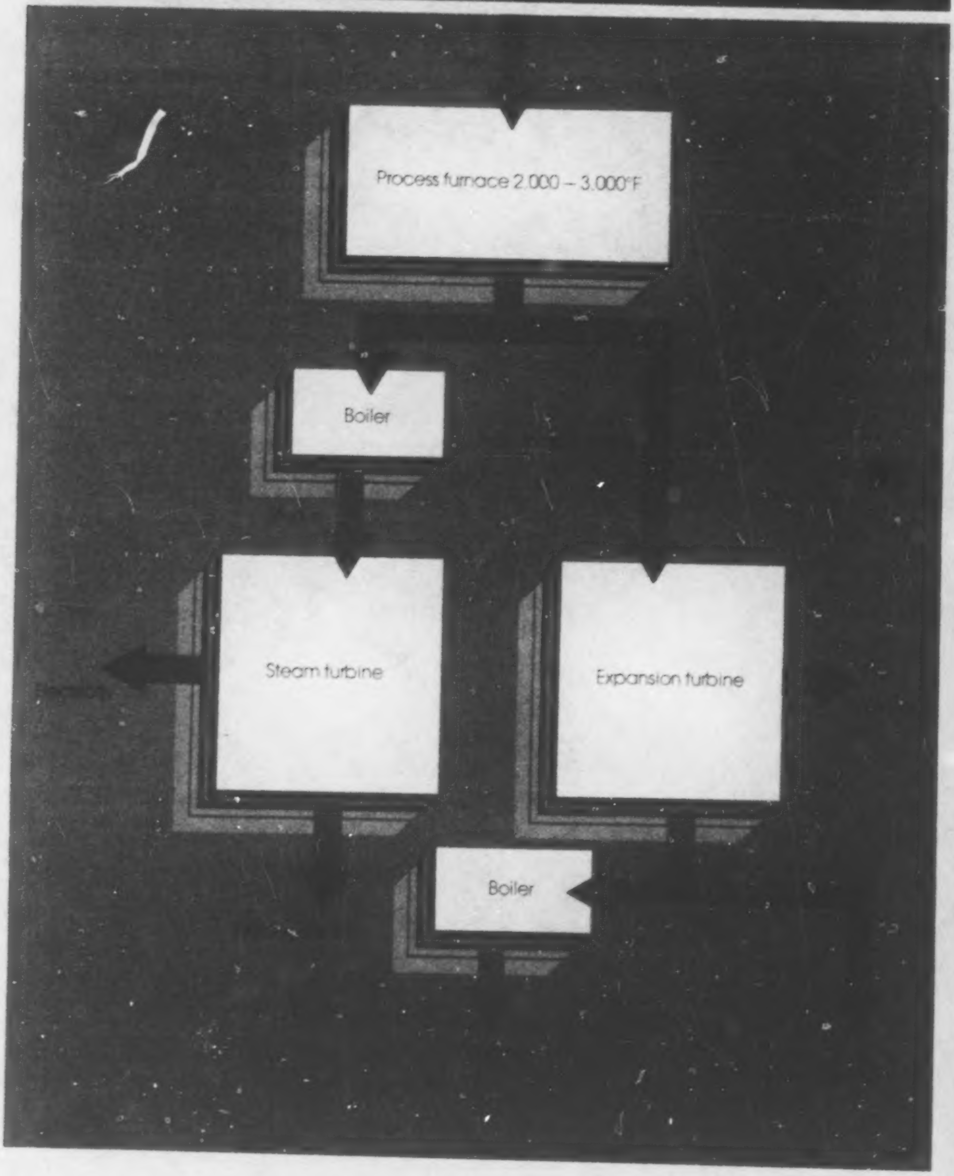
(Continued on Page 10)

Topping Cycle Gas Turbine/Waste Heat Recovery


Process
steam
Waste heat boiler
Exhaust
gasses
Fuel
Fired
Gas turbine
Generator
Electric
power

BEST COPY AVAILABLE

Bottoming Cycle Waste Heat Recovery/Electric Generation


Process furnace 2,000 – 3,000°F
Boiler
Steam turbine
Expansion turbine
Boiler

BEST COPY AVAILABLE

4. Equipment Information

Cogeneration systems use conventional technology. Equipment is readily available from manufacturers. It's the application that's unique, which is why it's so important to have qualified personnel conduct a comprehensive feasibility study.

You can obtain information on cogeneration equipment from manufacturers, from companies that have installed cogeneration systems, and from engineering consultants who perform feasibility studies.

H. EXAMPLES OF COGENERATION SYSTEMS

Following are brief descriptions of four cogeneration installations within Edison's service territory, including a residential cogeneration project.

1. Loma Linda University

Officials at Loma Linda University view cogeneration "as a means of keeping the institution solvent," says John H. Kriley, in charge of physical plant and construction operations at the university. "Without cogeneration, we would be priced out of the educational field," he adds.

A steam turbine topping cycle system was installed at the central plant of the school and hospital complex in 1980 as part of a $3.8 million energy conservation and power centralization program. Energy savings from the cogeneration system have been significant, and Kriley expects savings to increase even more as energy costs continue to rise.

Conventional boilers provide hot water for space heating and the domestic hot water supply. The boilers also produce steam for two 1,200 kilowatt steam turbines that generate electricity to meet some of the power needs of the university and hospital complex. Exhaust from the steam turbines is directed to absorption chillers to produce chilled water for air conditioning.

Loma Linda's cogeneration system operates in parallel with the Edison grid.

2. Kerr-McGee Chemical Corporation

Unlike the system at Loma Linda, where all the energy produced is consumed on-site, the cogeneration plant at Kerr-McGee Chemical Corporation's Trona, Calif., facility produces excess energy sold to Edison.

Kerr-McGee operates a gas turbine topping cycle system with a waste heat recovery boiler. The steam from the heat recovery boiler is used in chemical production.

This 15,000 kilowatt power generation system is primarily intended to meet electricity needs at the chemical plant, but when excess power is available, it is sold to Edison.

The Trona cogeneration facility in Southern California's desert area can use either natural gas or oil as a fuel.

Kerr-McGee officials at the chemical firm say cogeneration can significantly reduce energy costs.

3. Procter & Gamble

Procter & Gamble's cogeneration project involves a system which sequentially produces all the heated process air required at the company's Oxnard, Calif., paper plant and generates approximately 20,000 kilowatts of electric power.

The cogeneration system consists of a large gas turbine, similar to an airplane jet engine, fueled by natural gas or a middle-distillate petroleum product such as diesel fuel or kerosene.

Procter & Gamble sells about half of its electrical output to Edison. The power purchased by Edison is equivalent to the needs of more than 10,000 homes.

The Procter & Gamble facility is one of the largest cogeneration systems operating in parallel with the Edison grid.

4. Residential Cogeneration

In addition to commercial, industrial and agricultural applications for cogeneration, there is also a potential for using cogeneration systems in apartment complexes and housing developments.

Edison has installed a cogeneration system at an apartment complex in San Dimas, Calif., to demonstrate the feasibility of residential applications and to gain information about cost effectiveness.

The facility uses three natural gas-fired reciprocating internal combustion engines, each driving a 150-kilowatt generator. Power from the facility is fed into the Edison grid, while waste heat recovery from the engine cooling water and exhaust gases provides heat for domestic hot water. Waste heat is also used in conjunction with absorption chillers to provide cooling, and can supply space heating. This demonstration facility helps to meet the energy needs of 98 apartment units in a 156-unit complex.

small power production

If your company has the resources to use alternate or renewable energy, such as solar, wind or water (hydro), small power production should be considered.

A. DEFINITION OF SMALL POWER PRODUCTION

While cogeneration facilities produce both electricity and a form of useful heat, small power production facilities as defined under PURPA generate only electricity and are not designed to produce heat energy. While most cogeneration projects in California use natural gas or oil as a fuel, federal regulations discourage the use of significant amounts of fossil fuels for small power production facilities.

Edison encourages the development of alternate and renewable resources. If you are considering a project, contact our Cogeneration and Small Power Projects Section at (213) 572-1419. We offer purchase rates for electricity similar to the contract terms we have for cogeneration facilities.

B. EXAMPLES OF SMALL POWER PRODUCTION

1. Waste to Energy

Private landfill operators and government sanitation districts have the potential for burning municipal refuse to produce energy.

Edison is discussing a proposal for a research and development project with the city of Santa Monica that calls for a facility which would burn 200 tons per day of refuse to produce 5,000 kilowatts of electricity.

Equipment for burning refuse to yield power is already on the market, and systems are in operation in other parts of the United States and in some foreign countries. Environmental regulations in California thus far have limited development in this state.

2. Wind Energy

Wind turbines can generate electricity, and Edison will purchase all or part of a customer's excess electric output. A 40-kilowatt wind turbine operates on a farm in Lancaster, and uses the power for agricultural pumping. There also are residential wind systems generating power within Edison's service territory. Some private firms are planning wind energy projects to produce larger amounts of electricity.

3. Solar Cells

Solar cells (photovoltaics) are currently in the research and development stage, but hold promise for producing electricity at costs competitive with other forms of power generation. Solar cells convert sunlight directly into electricity, and require little maintenance.

conclusion

Dramatic changes in the cost, production and availability of energy have set the stage for you to consider producing energy to meet some or all of your needs. Parallel generation with Edison may allow you to not only lower your energy costs by producing your own power, but may also give you the opportunity to realize income from the sale of excess power to Edison.

Edison engineers specializing in cogeneration and small power plant projects are ready to work with you to evaluate your potential for producing electrical energy. If you decide to operate a cogeneration or small power production facility, Edison is willing to negotiate contracts to allow parallel operation with the electric system and to purchase any power output from the facility that may be available.

We hope this booklet gives you a better understanding of cogeneration and small power production. If you have any questions about these energy options don't hesitate to call us at (213) 572-1419.

EXHIBIT D

Southern California Edison Company

Renewable/Alternative Resources
Progress To Date
April 21, 1982

Resources	Firm*	High Potential**	Total
o Large Hydro (third parties only)			
- Capacity	120 MW	284 MW	404 MW
- No. of Contracts	1	1	2
o Large Hydro (SCE)			
- Capacity	200 MW	-	200 MW
- No. of Projects	1	-	1
o Small Hydro (third parties only)			
- Capacity	82 MW	16 MW	98 MW
- No. of Contracts	5	10	15
o Small Hydro (SCE)			
- Capacity	42 MW	8 MW	50 MW
- No. of Projects	14	3	17
o Cogeneration (Dedicated)			
- Capacity	443 MW	471 MW	914 MW
- No. of Contracts	14	10	24
o Cogeneration (Non-Dedicated)			
- Capacity	171 MW	120 MW	291 MW
- No. of Contracts	27	15	42
o Wind			
- Capacity (nameplate rating)	130 MW	174 MW	304 MW
- No. of Contracts	9	10	19

* Firm - On-line, under construction, signed contracts, or Letter of Intent.
** High Potential - Under negotiation or under study.

Resources	Firm*	High Potential**	Total
o Wind (SCE)			
- Capacity	1 MW	-	1 MW
- No. of Projects	2	-	2
o Geothermal (third parties)			
- Capacity	57 MW	150 MW	207 MW
- No. of Contracts	2	1	3
o Geothermal (SCE)			
- Capacity	61 MW	104 MW	165 MW
- No. of Projects	3	2	5
o Solar (Third parties)			
- Capacity	11 MW	74 MW	85 MW
- No. of Contracts	2	3	5
o Solar (SCE)			
- Capacity	8 MW	100 MW	108 MW
- No. of Projects	1	1	2
o Fuel Cell			
- Capacity - No. of Contracts	0	0	0
GRAND TOTAL:	1,326 MW 81 Projects	1,501 MW 56 Projects	2,827 MW 137 Projects
SCE:	312 MW 21 Projects	212 MW 6 Projects	524 MW 27 Projects
THIRD PARTIES:	1,014 MW 60 Contracts	1,289 MW 50 Contracts	2,303 MW 110 Contracts

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4/22/82

EXHIBIT E

FULL AVOIDED COST (FAC)

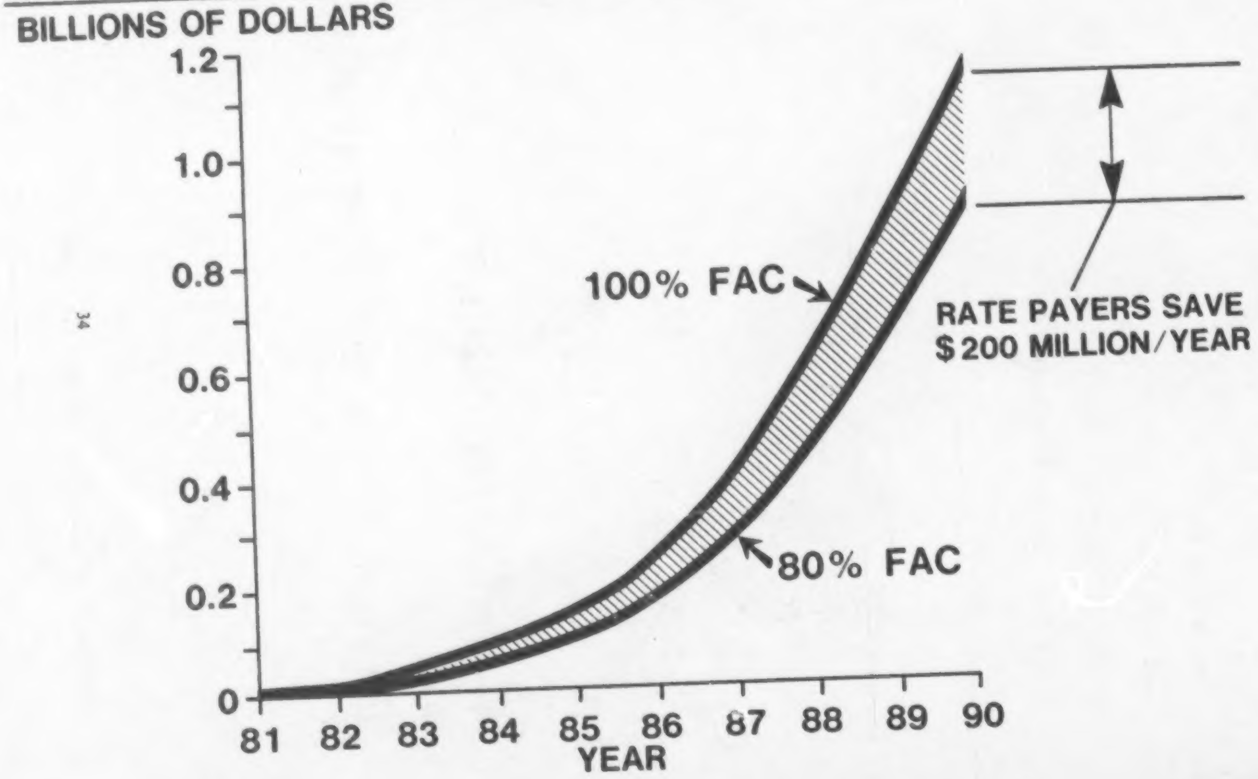

EXHIBIT F

Guidelines for
Operating
Metering
Protective Relaying

for
Co-Generators
and
Small Power Producers

June 1981

Southern California Edison Company

SOUTHERN CALIFORNIA EDISON COMPANY

GUIDELINES FOR
OPERATING
METERING
PROTECTIVE RELAYING
FOR
CO-GENERATORS AND SMALL POWER PRODUCERS

June 1981

System Operation Division
Power Supply Department

Southern California Edison Company

Guidelines for Operating, Metering and Protective Relaying for Cogenerators and Small Power Producers

1.0 Introduction
- 1.1 Edison policy on customer generation
- 1.2 Generation sources
- 1.3 Separate systems
- 1.4 Parallel operation

2.0 General Requirements
- 2.1 Design requirements
- 2.2 Operating requirements
- 2.3 Design information — Edison system
- 2.4 Induction generators
- 2.5 Inverter systems

3.0 Specific Requirements
- 3.1 Generation 200 kVA and over, Edison-owned protection
- 3.2 Generation 200 kVA and over, customer-owned protection
- 3.3 Generation less than 200 kVA

4.0 Figures
- 4.1 Typical parallel generation with Edison protection
- 4.2 Typical parallel generation with customer protection
- 4.3 Typical parallel generation under 200 kVA
- 4.4 Typical relay/contactor arrangement (under 200 kVA)
- 4.5 Protective device numbers

Guidelines for Operating, Metering and Protective Relaying for Cogenerators and Small Power Producers

1.0 Introduction

These guidelines state the minimum requirements for safe and effective operation of customer-owned generation on the Edison system. Customers and Edison personnel may be guided by this document when planning installations of customer-owned generation. It is emphasized that these requirements are general and may not cover all details in specific cases. The customer should discuss project plans with Edison before purchasing or installing equipment.

For the purpose of simplicity, the term customer will be used in this guideline to refer to both cogenerators and small power producers, even though they may not actually be customers for Edison's electric service.

> NOTE: The interconnection guidelines contained herein are currently under review by the California Public Utilities Commission under its Order Instituting Rulemaking No. 2. These guidelines are, therefore, subject to change in order to conform to Commission orders.

1.1 Policy on Customer Generation

It is the policy of Southern California Edison Company to permit any customer to operate his generating equipment in parallel with our electric system whenever this can be done without adverse effects on the general public, or to Edison equipment or personnel. Certain protective devices (relays, circuit breakers, etc.), specified by Edison, must be installed at any location where a customer desires to operate generation in parallel with the Edison system. The purpose of these devices is to promptly disconnect the customer's generating equipment from the Edison system whenever faults or abnormal operation occur. Other modifications to electrical system configuration or protective relays may be required in order to accommodate parallel generation.

Southern California Edison Company will not assume any responsibility for protection of the customer's generator(s), or of any other portion of the customer's electrical equipment. The customer is fully responsible for protecting his equipment in such a manner that faults or other disturbances on the Edison system do not cause damage to the customer's equipment.

1.2 Generation Sources

The customer may elect to use any of a variety of energy sources including solar, wind or other types of sources, in addition to conventional fossil fuels. The end conversion for connection to the utility's system must be into 60 Hz alternating current.

The customer may elect to run his generator in parallel with the utility or as a separate system with the capability of non-parallel load transfer between the two independent systems. The requirements for these two methods of operation are outlined below.

1.3 Separate Systems

A separate system is defined as one in which there is no possibility of connecting the customer's generating equipment in parallel with the utility's system. For this design to be practical, the customer must be capable of transferring load between the two systems in an open transition or non-parallel mode. This can be accomplished by either an electrically or mechanically interlocked switching arrangement which precludes operation of both switches in the closed position.

If the customer has a separate system, Edison will require verification that the transfer scheme meets the non-parallel requirements. This will be accomplished by approval of drawings by Edison in writing and if Edison so elects, by field inspection of the transfer scheme. Edison will not be responsible for approving the customer's generation equipment and assumes no responsibility for its design or operation.

Most Uninterruptible Power Supply (UPS) systems do not specifically meet the separate system criteria. However, if they are not capable of backfeed (transfer of electric power from the emergency source to the normal source), they will be classified as a separate system. If they can backfeed, they must meet the requirements of parallel generation.

1.4 Parallel Operation

A parallel system is defined as one in which the customer's generation can be connected to a bus common with the utility's system. A transfer of power between the two systems is a direct and often desired result. A consequence of such parallel operation is that the parallel generator becomes an electrical part of the utility system which must be considered in the electrical protection of the utility's facilities.

Utility lines are subject to a variety of natural and man-made hazards. Among these are lightning, wind, animals, automobiles, malicious mischief and human error. Residential and commercial electric systems are subject to these same hazards but not to nearly the same degree because of the limited extent and protected environment of such systems.

The electric problems which can result from these hazards are principally short circuits, grounded conductors, and broken conductors. These fault conditions require that the damaged equipment be de-energized as soon as possible because of the hazards they pose to the public and the operation of the system.

In systems without parallel generation, the utility controls the only source of supply to a given line and therefore has the responsibility to install equipment which is adequate, under expected circumstances, to detect faulted equipment and de-energize it. A parallel generator connected to a utility line represents another source of power to energize the line and must also have adequate protective devices installed to sense trouble on the utility system.

Parallel generation can also cause another condition, "accidental isolation," in which a portion of the utility's load becomes isolated from the utility source but still connected to the parallel generation. In this condition, the voltage may collapse or the isolated system may continue to operate independent of the utility (but probably with abnormal voltage or frequency). The probability of an isolated system continuing to operate increases with increasing size of the parallel generator compared to the amount of potentially isolated load.

The protective devices and other requirements imposed by Edison in the following sections are intended to provide protection against the hazards noted above by disconnecting the parallel generator when trouble occurs. These requirements are few for small installations but increase as the size of the generation increases. For small installations, the basic philosophy is to ensure that the generator is small compared with the magnitude of any load with which it might be isolated. Thus, for any fault, Edison's protective relays will operate and isolate the generation with a large amount of load, causing voltage collapse and automatic shutdown of the generator. This approach is particularly appropriate for the induction generator or inverter systems commonly proposed for small parallel generators since these systems do not contribute sustained overcurrents which could be used to detect faults directly. In instances where the Edison system arrangement is such that it is possible that the generators will not always be isolated with large amounts of load, Edison permits the use of voltage and frequency measuring relays to detect isolation.

For larger installations the probability of isolated operation is higher since the available generation may be sufficient to carry the entire load of Edison's circuit. For these installations specific devices are required for the detection of short circuits and grounds on the utility system as well as voltage and frequency relays to detect isolated operation.

The general and specific requirements for parallel generation installations of various sizes are discussed in the following sections.

2.0 General Requirements

2.1 Design Requirements

2.1.1 The customer's installation must meet all applicable national, state and local construction and safety codes.

2.1.2 Protective devices (relays, circuit breakers, etc.) for the protection of Edison's system, metering equipment, and synchronizing equipment must be installed as required by Edison. The protective devices and the installing party (Edison or customer) may differ with the size of the installation. See section 3.0 for specific requirements. Certain requirements regarding liability and indemnity differ depending upon ownership of the protective devices (see 2.2.3).

2.1.3 A manual disconnecting device which can be opened for line clearances must be provided. The form of this device will vary with the service voltage and capacity.

2.1.4 In installations where the customer is to provide protective devices for the protection of Edison's system, the customer shall submit a single-line drawing of this equipment to Edison for approval of the protective functions. Any changes required by Edison shall be made prior to final issue and Edison shall be provided with final copies of the reviewed drawings.

Edison will approve only those portions of drawings which apply to protection of Edison's system. Edison may comment on other areas which appear to be incorrect or deficient, but will not assume responsibility for the correctness of protection pertaining to the customer's system.

2.2 General Operating Requirements

2.2.1 The interconnection of the customer's generating equipment with the Edison system shall not cause any reduction in the quality of service being provided to other customers, with no abnormal voltages, frequencies, or interruptions being permitted. If high or low voltage complaints or flicker complaints result from operation of the customer's generation, such generating equipment shall be disconnected until the problem is resolved.

2.2.2 The customer may not commence parallel operation of generator(s) until final written approval has been given by Edison. Edison reserves the right to inspect the customer's facility and witness testing of any equipment or devices associated with the interconnection.

2.2.3 Customer shall indemnify and hold Edison harmless for all damages and injuries to Edison or others arising out of customer's use, ownership, or operation of customer's facilities, and caused in whole or in part by customer's negligence. Customer is solely responsible for providing adequate protection for customer's facilities operating in parallel with Edison's system and shall release Edison from any liability for damages or damages or injury to customer's facilities arising out of such parallel operation, unless caused solely by Edison's negligence. In installations where the interconnection protection facilities are owned, operated and maintained by customer, customer shall indemnify and hold Edison harmless from any liability for damages to Edison or others arising out of the misoperation or malfunction of customer-owned facilities. Customers shall be required to maintain in-force liability insurance in an amount sufficient to satisfy reasonably foreseeable indemnity obligations and shall name Edison as an additional insured under said insurance policy.

2.2.4 The customer will not be permitted to energize a de-energized Edison Company circuit.

2.2.5 Operation of the customer's generator shall not adversely affect the voltage regulation of the Edison system to which it is connected. Adequate voltage control shall be provided, by the customer, to minimize voltage regulation on the Edison system caused by changing generator loading conditions.

For synchronous generators, sufficient generator reactive power capability shall be provided to withstand normal voltage changes on the Edison system. The generator voltage-var schedule, voltage regulator, and transformer ratio settings will be jointly determined by Edison and the customer to ensure proper coordination of voltages and regulator action. Customers are encouraged to generate their own var requirements to minimize power factor adjustment charges and enhance generator stability.

In cases where starting or load changing on induction generators will have an adverse impact on Edison system voltage, step-switched capacitors or other techniques may be required to bring the voltage changes to acceptable levels.

2.2.6 The customer shall maintain his equipment in good order. Edison reserves the right to inspect the customer's facilities whenever it appears that the customer is operating in a manner hazardous to Edison's system integrity.

2.2.7 The customer shall discontinue parallel operation when requested by Edison:

a. To facilitate maintenance, test, or repair of utility facilities.

b. During system emergencies.

c. When the customer's generating equipment is interfering with other customers on the system.

d. When an inspection of the customer's generating equipment reveals a condition hazardous to the Edison system or a lack of scheduled maintenance or maintenance records for equipment necessary to protect the Edison system.

2.2.8 The customer shall maintain an operating log at each generating facility indicating changes in operating status (available or unavailable), maintenance outages, trip indications or other unusual conditions found upon inspection. For generators which are "block-loaded" to a specific kW level, changes in this setting shall also be logged.

2.2.9 The customer shall notify Edison, in writing, of the monthly kWh production of each generator on the first regular working day of the following month. Large power producers may be required to report energy and peak demand information daily.

2.3 Design Information — Edison System

2.3.1 Edison's most common primary distribution voltages are 4, 12 and 16 kV depending on the geographic area. Other voltages are also used in specific areas. Subtransmission voltages are 66 and 115 kV. The majority of the 4, 12 and 16 kV circuits are effecfively grounded, but some are operated with high impedance grounding which may impose special requirements on generating customers with 200 kVA or more capacity. A substantial number of the effectively grounded circuits are used for four-wire distribution (phase to neutral connected loads). Special requirements for generating customers on these circuits are described in 3.2.10. Contact the company for information on the specific circuit serving the customer's facility.

2.3.2 Because most short circuits on overhead lines are of a temporary nature, it is Edison's practice to reclose the circuit breakers on such lines within a few seconds after they have automatically tripped. This practice improves continuity of service to all customers. The protective relays specified by Edison for parallel generation interfaces are intended to disconnect the generation from faulty or isolated lines before reclosing occurs. Should the customer desire additional protection against the possibility that reclosing might occur with his generator still connected to the line (a potentially damaging occurrence for synchronous generators), Edison can provide "Hot Line Reclose Blocking" at the necessary points on its system. Edison's preference is to avoid such equipment because of the possible adverse effects on service continuity and the problems of moving or rearranging the equipment to accommodate system changes. Costs for installing, maintaining, and/or rearranging such equipment will be borne by the customer(s) requesting the equipment.

2.3.3 Customers with three-phase generators should be aware that certain conditions in the utility system may cause negative sequence currents to flow in the generator. It is the sole responsibility of the customer to protect his equipment from excessive negative sequence currents.

2.4 Induction Generators

Reactive power supply for induction generators may pose difficult design problems, depending on the generator size. For generation aggregating less than 200 kVA capacity Edison will supply the var requirements from general system sources without a specific charge to the customer. Installations over 200 kVA capacity will likely require capacitors to be installed to limit the adverse effects of reactive power flow on Edison's system voltage regulation. Such capacitors will be at the expense of the generating facility. The installation of capacitors for reactive power supply at, or near, an induction generator greatly increases the risk that the induction machine may become self-excited if accidentally isolated from Edison's system. The self-excited induction generator can produce abnormally high voltages which can cause damage to the equipment of other customers. Overvoltage relays can limit the duration of such overvoltages but cannot control their magnitude because of the rapid voltage rise which occurs with self-excitation. Because of these problems, reactive power supply for large induction generators must be studied on an individual basis. In general, self-excitation problems are most likely in rural areas where the Edison system capacity and load density are low. Since such areas are relatively likely to be chosen for certain forms of small power production such as wind and hydro, it is particularly important to contact Edison before assuming that induction machines can be connected to existing distribution lines. Where self-excitation problems appear likely, special service arrangements will be required such as two-line loop service or subtransmission service in order to avoid the induction generator becoming isolated with small amounts of load. In many cases, the additional expense for such special service methods may outweigh the cost savings associated with induction generators.

2.5 Inverter Systems

Reactive power supply requirements for inverter sytems are similar to those for induction generators and the general guidelines discussed in Section 2.4 apply. Likewise, inverter systems are also capable of isolated operation. Self-commutated inverters have this capability by design. Line commutated inverters could operate isolated if connected to rotating machines which provide the necessary commutation. Because of these possibilities of self-excited operation, inverter systems are treated as induction machines in these guidelines.

At present no standards exist for the harmonic output of power inverters. If a customer using such a device for parallel generation is found to be interfering with other customers or utilities, or if standards are adopted in the future, the generating customer may be required to install filtering to bring the harmonic output of his inverter to an acceptable level.

3.0 Specific Requirements

Edison has established three different classes for customer-owned parallel generation, each with distinctive protection, metering and operating requirements. These classes are:

1. 200 kVA and over, with Edison interface protection
2. 200 kVA and over, with customer-owned protection
3. less than 200 kVA

Where multiple generators are connected to Edison's system through a single service point, the class will be determined by the sum of the ratings of the generators.

It should be understood that these classes have been established for convenience and are based on urban/suburban circuits with normal load density. The final decision as to the requirements for each installation will be made depending on customer load magnitude, the magnitude of other load connected to that circuit/system, available short circuit contribution, etc.

3.1 Total Generation 200 kVA and Over, Edison-Owned Protection

If the customer so desires, Edison will own and maintain, at the customer's expense, a parallel generation interface at the Edison service point. This interface facility can be constructed in one of three ways.

a. Edison to construct the interface as added facilities; customer to pay standard added facilities rate which is currently 1.7%/month.

b. Edison to construct the interface with customer to advance the net estimated installed cost and pay an operating and maintenance charge, which is currently 0.75%/month.

c. Customer to construct the interface to Edison specifications, using Edison-approved equipment, and transfer ownership of the facility to Edison. Edison will collect a one-time engineering charge for reviewing the design and the monthly O & M charge.

Refer to figure 4.1 for a typical installation with Edison interface. The specific requirements are:

3.1.1 Edison-owned and controlled circuit breaker to disconnect generation for Edison system trouble.

3.1.2 Customer-owned and controlled circuit breaker or disconnect switch (as required) at the main to disconnect for customer system trouble. If desired, Edison may permit the customer to trip and/or close the Edison breaker by remote control. If synchronizing is to be done with this breaker, Edison will install synchronizing supervision relays as required.

3.1.3 Customer to provide synchronizing relays or equipment at the main, generator and other breakers as appropriate. Either induction starting, automatic synchronizing or manual synchronizing supervised by a synchronizing relay must be provided. Induction starting will be permitted only where the inrush will not exceed allowable limits. Customer shall never attempt to parallel customer's system with Edison's system when the customer's synchronizing facilities are malfunctioning or inoperative. Unsupervised manual synchronizing is not permitted.

3.1.4 Edison-owned and maintained protective relays which perform these three functions:

a. Short Circuit Protection (Devices 51V or 67V, 51N or 59N)

The designated relays will detect faults on the Edison circuit/system to which the customer generator is connected. Generally, the phase relays are voltage restrained overcurrent type or impedance torque controlled overcurrent type. Occasionally, pilot relays or transferred tripping relays may be required. In ground fault protection, a directional overcurrent relay or ground fault voltage detector may be used. A grounding transformer may be required if the circuit/system is equipped for phase-to-neutral power distribution.

b. Isolation Protection (Devices 27/59, 81-0, 81-U)

During the course of fault clearing or due to accident, equipment malfunction, or malicious mischief, it is possible for an Edison circuit/system to become separated from the main system, leaving other customers on the circuit supplied from the customer's generator. In order to protect those customers from abnormal voltage or frequency excursions under these conditons, relays for isolation protection are required. Generally, these relays will consist of an overfrequency relay, an underfrequency relay and an over/under voltage relay.

c. Breaker Closing/Reclosing Control (Devices 25, 47, 79)

Because of the generation at the customer's plant, it is important that the closing of the Edison CB be controlled so that it can only be closed when it is safe to do so. Inadvertent closing of the CB could result in paralleling out of synchronism or energizing of de-energized facilities and hazardous conditions could result.

The required logic for manual closing of the Edison breaker is:

1. The line side of the breaker is energized with proper voltage and phase sequence, the load side of the breaker is de-energized and the customer's main breaker (or generator breaker) is open, or

2. Synchronism check across the breaker is satisfactory. Practically, this indicates that either the breaker bypass switch is closed or interconnection with the customer already exists elsewhere.

In order to provide the best continuity of service to the customer, automatic reclosing of the Edison breaker subsequent to fault clearing is engineered into the control circuitry. If the trouble is permanent, the breaker will trip again and lockout. No further reclosing will take place until the breaker has been reclosed manually. The required conditions for automatic reclosing are the same as for manual closing. Where provision is made for closing of the Edison circuit breaker by the customer, the required conditions for closing will be the same as for manual closing by Edison except that the customer closing control may also be used to enable Edison's synchronizing relay (see 3.1.2).

3.1.5 In installations where surplus power sales are anticipated and for all simultaneous buy and sell arrangements, Edison will install metering for kW, (in), kWh (in), kW (out), kWh (out) and kVARH (in). This metering will be in the Edison interconnection facility or in the customer's switchgear, as appropriate. In addition, the customer shall also provide adequate space in the generator switchgear for Edison to install, at its cost and option, metering and/or telemetering of the generator output.

3.1.6 For installations of over 1,000 kVA capacity, telephone facilities shall be provided for communications between the customer's generating facility and Edison.

3.2 Total Generation Over 200 kVA, Customer-Owned Protection

All installations in this class require Edison review of the protective functions to be provided (see section 2.1.4). Refer to figure 4.2 for a typical installation. Note that certain requirements regarding liability and indemnity apply to installations using customer-owned protection (see section 2.2.3).

3.2.1 The customer shall provide adequate protective devices to:

a. Detect and clear the generator(s) from short circuits or grounds on the Edison facilities serving the customer.

b. Detect the voltage and frequency changes which can occur if the Edison facilities serving the customer are disconnected from the main system and clear the customer generation from the isolated system.

c. Prevent reparalleling the customer generation, after an incident of trouble, unless the Edison service voltage is of normal magnitude and phase sequence.

3.2.2 Typical protection devices which may be required to satisfy the above requirements are:

a. Phase overcurrent trip devices (Device 51).

In most cases these will have to be voltage-restrained or voltage-controlled overcurrent relays in order to provide coordination with Edison relays.

b. Residual overcurrent or overvoltage relays to trip for ground faults on the Edison system. (Devices 51N or 59N).

c. Under/over voltage relays (Device 27/59).

Undervoltage relays should be adjustable from 75-90% of nominal voltage and have time delay to prevent unnecessary tripping on external faults. Overvoltage relays should be adjustable from 110-120% of nominal voltage and may be instantaneous. Setting change with temperature variation should not exceed ± 2 volts over the expected temperature range.

d. Under/over frequency relays (Device 81).

The underfrequency relay should be adjustable from 55-59 Hz and the overfrequency relay from 61-65 Hz. Setting change with temperature variation over the expected range, or voltage variation over ± 10%, should not exceed ± 1 Hz.

e. Phase sequence/undervoltage relay (Device 47/27).

To permit paralleling when Edison voltage and phase sequence are normal.

3.2.3 In specific installations, particularly with large generators (over 10,000 kVA), Edison may require specific additional protective functions such as loss of excitation, loss of synchronism and overexcitation protection, if these conditions would have an impact on Edison's system.

3.2.4 Depending on the size of the generation and the size of the distribution or subtransmission system to which it is connected, Edison may require the customer to utilize "utility quality" protective relays. Such relays have more stringent tolerances and more flexible, widely published characteristics than "industrial quality" relays. This requirement will be invoked only if generation is of such size that close coordination with Edison relays is required. In general, installations aggregating less than 1,000 kVA will not be subject to this requirement.

3.2.5 Where induction generators or static inverters are employed rather than synchronous machines, the phase overcurrent protective devices required by Edison will be waived since these sources will not deliver sustained overcurrents. The other protective devices are required.

3.2.6 In some cases, protective devices supplied with the generating equipment will meet some or all of these requirements, provided that it is acceptable to trip the generator whenever the Edison source is lost. If the customer desires to automatically separate from Edison and commence isolated operation upon loss of the Edison source, additional devices will be necessary to effect the separation.

3.2.7 All protective devices supplied to satisfy the requirements in 3.2.1 shall be equipped with operation indicators (targets) or shall be connected to an annunciator or event recorder so that it will be possible to determine, after the fact, which devices caused a particular trip.

3.2.8 All protective devices supplied to satisfy the requirements in 3.2.1 shall be tested by qualified personnel at intervals at least as frequent as those used by Edison for the relays protecting the line(s) serving the customer. This interval is currently four years for lines of 33 kV and below. Lines traversing fire hazardous areas are required to have their relays tested annually before May 1st. Special tests may also be requested by Edison to investigate apparent misoperations or to have a record of the performance for anticipated litigation.

Each routine or special test shall include both a calibration check and an actual trip of the circuit breaker from the device being tested. For each test a report shall be prepared and sent to Edison listing the tests made and the "as found" and "as left" calibration values.

3.2.9 A manual disconnecting device which can be controlled by Edison must be available at the point of interconnection. The form of this device and its ownership will vary with the specifics of the service.

3.2.10 In projects where the customer is served from an Edison four-wire multi-grounded neutral distribution circuit, adequate grounding must be provided to ensure neutral stability during accidental isolation of the line from the main system. This is necessary to avoid dangerous overvoltages on other customers served from phase-to-neutral connected distribution transformers. Adequate grounding can be provided either by the use of a wye-delta main power transformer or by installing an appropriate grounding transformer. In order to limit the effects of such grounding on Edison's ground relay sensitivity, Edison may require that the grounding impedance be limited to the highest value suitable for neutral stabilization.

3.2.11 In installations where surplus power sales are anticipated and for all simultaneous buy and sell arrangements, Edison will install metering for kW (in), kWh (in), kW (out), kWh (out) and kVARH (in). This metering will be in the Edison interconnection facility or in the customer's switchgear, as appropriate. In addition, the customer shall also provide adequate space in the generator switchgear for Edison to install, at its option and expense, metering and/or telemetering of the generator output.

3.2.12 For installations of over 1,000 kVA capacity, telephone facilities shall be provided for communications between the customer's generating facility and Edison.

3.3 Total Generation Less Than 200 kVA

The following requirements for small generators are based on an assumed low density of parallel generation customers on the serving circuit. Other conditions may be imposed should the density exceed a tolerable limit. Refer to figure 4.3.

3.3.1 Manual disconnecting device at meter. This device is to permit Edison to disconnect the customer generation from its system for safety while working on the lines. For services of 200 amp capacity or less, Edison's metering facilities will be used for the disconnecting device.

3.3.2 Customer generator controls to be equipped with a line voltage relay or contactor which will prevent the generator from being connected to a de-energized or single-phased (if normally three-phase) source. This relay is to disconnect the generator from a de-energized utility line and prevent its reconnection until the line is reenergized by Edison.

3.3.3 Customer to be served through a dedicated distribution transformer which serves no other customers. The purpose of the dedicated transformer is to ensure that the generator cannot become isolated with a small amount of other customer load. It also serves to confine any voltage fluctuations or harmonics produced by the generator to the customer's own system. In instances where it is impractical to provide a dedicated transformer, the relays described in 3.2.2c and 3.2.2d will be accepted in lieu of the dedicated transformer. The relays may be arranged to de- energize the contactor described in 3.3.2. as shown in figure 4.4.

3.3.4 In order to reduce the possibility of self-excited operation, all reactive power requirements for induction generators or power inverters shall be supplied by Edison. Except in unusual situations, this var supply will be from general utility sources and no specific charge will be made to the customer for the reactive power.

3.3.5 At present no standards exist for the harmonic output of power inverters. If a customer using such a device for parallel generation is found to be interfering with other customers or utilities, or if standards are adopted in the future, the generating customer may be required to install filtering to bring the harmonic output of his inverter to an acceptable level.

3.3.6 For all generating installations, existing kWh meters will be equipped with a detent to prevent reverse registration. Where surplus power sales are anticipated, Edison will install additional metering so that kWh (in) and kWh (out) are separately recorded. Additional metering for kW and kVARH will be determined by the requirements of the individual installation.

NOTES:

1. Customer's main breaker or switch.
2. Directional power relay (32) blocks 81-U if power flow is to customer. For other devices see Fig. 4.5.
3. Transformation by Edison or customer as required.

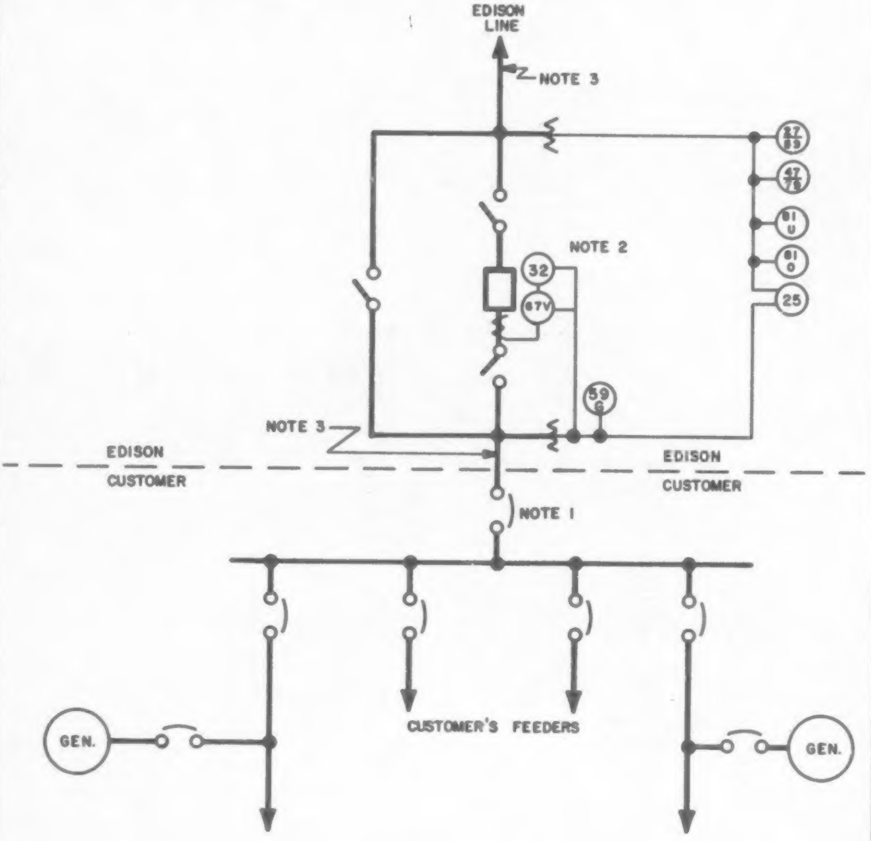
EDISON
LINE
NOTE 3
27/59
47/78
81 U
81 O
25
NOTE 2
32
67V
59 G
NOTE 3
EDISON
CUSTOMER
EDISON
CUSTOMER
NOTE 1
GEN.
CUSTOMER'S FEEDERS
GEN.

FIGURE 4.1 Typical Parallel Generation with Edison Protection

NOTES:

1. " ✱ " indicates devices required by Edison. Others are shown as conventional practice.
2. For device functions see Fig. 4.5.
3. Transformation (as required) by Edison or customer.
4. Grounding transformer or ground detector (by Edison or customer) required unless main transformer is Y/Δ .
5. Protective and synchronizing relays required if customer desires to serve isolated load during Edison outage. If not provided at main circuit breaker, these functions should be provided at generator breaker.

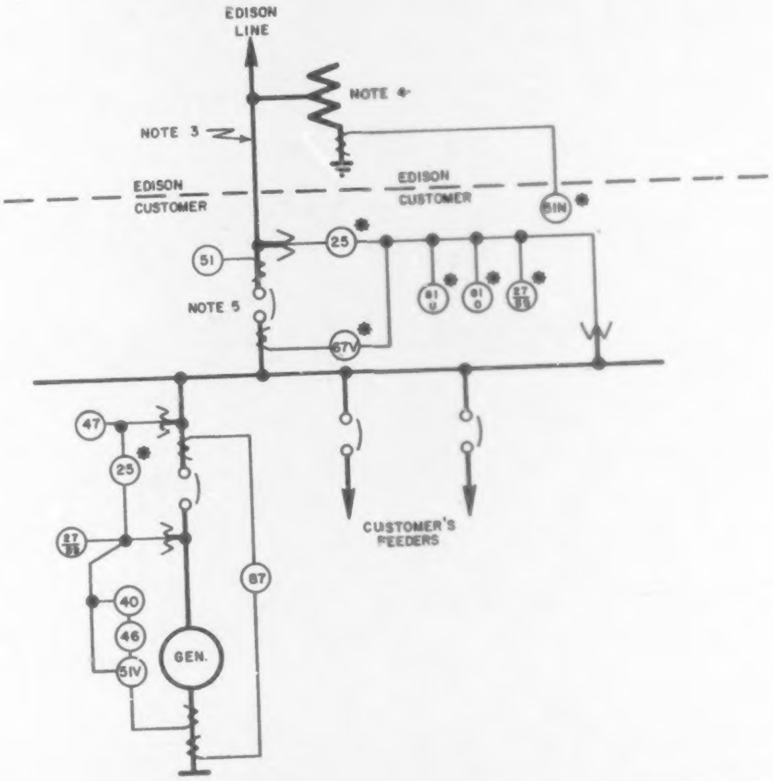
EDISON LINE
NOTE 4
NOTE 3
EDISON
CUSTOMER
EDISON
CUSTOMER
51N ✱
25 ✱
51
81 U ✱
81 O ✱
27/59 ✱
NOTE 5
67V ✱
47
25 ✱
27/59
87
40
46
51V
GEN.
CUSTOMER'S FEEDERS

FIGURE 4.2 Typical Parallel Generation with Customer Protection

NOTES:

1. Protective devices recommended by Edison for all installations but not required except as provided in Section 3.3.3.
2. Other protective devices for generator not shown because of large variations with type of generator.
3. Self-contained metering is typical.
4. See Fig. 4.5 for device function numbers.

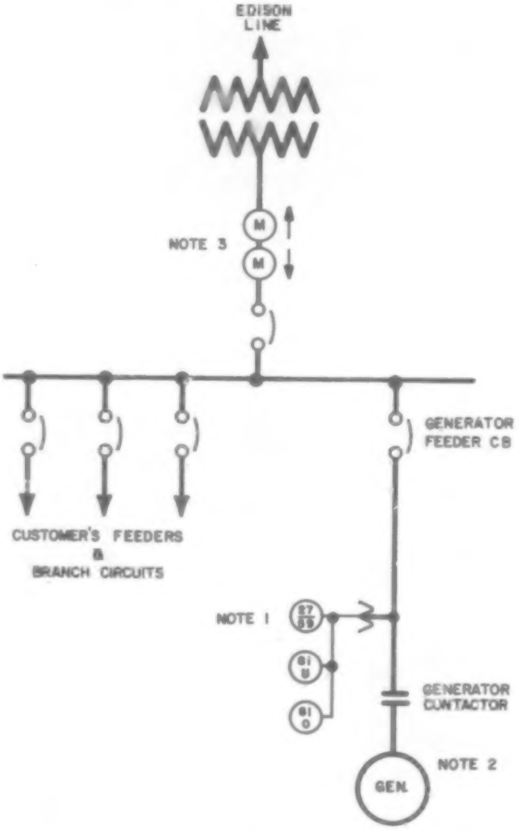
EDISON LINE
NOTE 3
M
M
GENERATOR FEEDER CB
CUSTOMER'S FEEDERS & BRANCH CIRCUITS
NOTE 1
27/59
81 U
81 O
GENERATOR CONTACTOR
NOTE 2
GEN.

FIGURE 4.3 Typical Parallel Generation Under 200 kVA

NOTES:

1. This drawing is intended to show the relay/contactor arrangement only. Other overcurrent or switching devices may be required by local authorities.
2. Contacts closed with normal voltage, frequency and phase sequence.
3. Control transformers are required to match relay/contactor voltage to supply voltage.
4. Arrangement shown is for three phase system. For single phase omit L3, TI, Dev. 47.
5. See Fig. 4.5 for device function numbers.

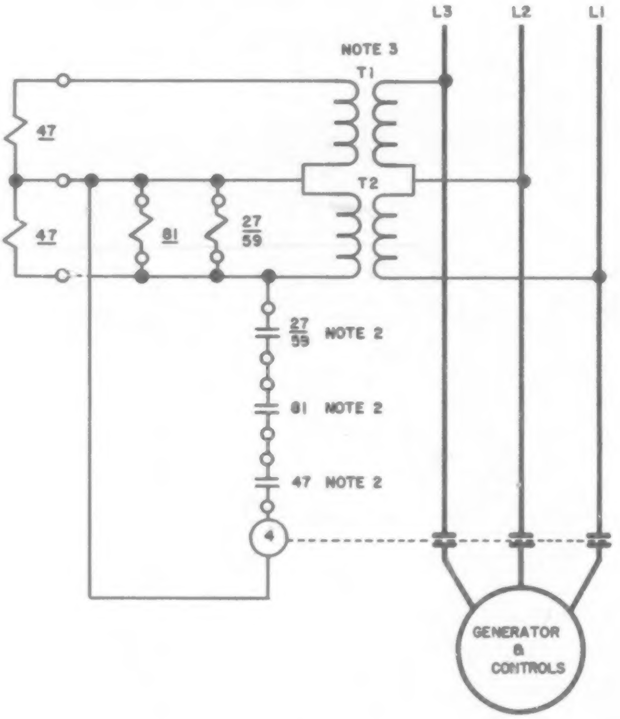
L3
L2
L1
NOTE 3
T1
T2
47
47
81
27/59
27/59 NOTE 2
81 NOTE 2
47 NOTE 2
4
GENERATOR & CONTROLS

FIGURE 4.4 Typical Relay/Contactor Arrangement (Under 200 kVA)

4	MASTER CONTACTOR
25	SYNCHRONIZING OR SYNCHRONISM CHECK
27	UNDERVOLTAGE
32	POWER DIRECTION
40	LOSS OF FIELD DETECTION
46	CURRENT BALANCE
47	VOLTAGE PHASE SEQUENCE
51	TIME OVERCURRENT
51G	GROUND TIME OVERCURRENT
51N	NEUTRAL TIME OVERCURRENT
51V	VOLTAGE RESTRAINED/CONTROLLED TIME OVERCURRENT
59	OVERVOLTAGE
59G	OVERVOLTAGE TYPE GROUND DETECTOR
67V	VOLTAGE RESTRAINED/CONTROLLED DIRECTIONAL TIME OVERCURRENT
79	RECLOSING RELAY
81O	OVERFREQUENCY
81U	UNDERFREQUENCY
87	CURRENT DIFFERENTIAL

NOTE:

For additional information on device numbers, refer to ANSI C37.2.

FIGURE 4.5 Protective Device Numbers

Senator HUMPHREY. Thank you.

Mr. Berlin, witnesses have urged that we delay pursuing provisions such as this and let the legal train run its course. How long is that going to take?

Mr. BERLIN. Senator, you have to address that question to the FERC. In my judgment the FERC should have begun finalizing appropriate rules right after the January 22 decision was issued. There is absolutely nothing to preclude the FERC today from taking the remanded action back to itself, from immediately publishing interim rules which would be effective through whatever period it becomes necessary to consider the adoption of final rules, and we could get on with meaningful cogeneration without any additional delay.

If there is to be additional delay it will only be brought about because of the FERC's insistence to seek Supreme Court review.

Senator HUMPHREY. Well that's the real world, unfortunately. But what I was asking is, How long do you think it's going to take before we get a decision on this from the courts?

Mr. BERLIN. Well, if I had to bet my last dollar I guess I would avoid answering the question. But if you force me, I would say that the Supreme Court would decline to accept a request for certiorari. Unfortunately we could not expect to have that refusal in hand before some time in mid-October due to the summer recess. So if the FERC is insistent upon doing nothing as a regulatory body until it exhausts its opportunity to obtain the Supreme Court review, I would anticipate that we would have a denial of certiorari sometime in mid-October.

Senator HUMPHREY. I also detect, in fact it was quite plain, that members of this panel don't fully trust the expertise of the State commissions to deal with these issues. Do you want to respond to that?

Mr. BERLIN. As a former State regulator, let me respond to it by disagreeing. It's not that we at all distrust the ability of State commissions to carry out this program as intended by Congress, I think we have to recognize that there are two problems created by the substituted amendment. First, your substitute amendment would create a presumption in favor of 100 percent avoided cost rule. Admittedly the States would have the authority to deviate from that presumption, but as we know from the AEP decision, from the review of the FERC decision, in order to deviate from the 100 percent avoided cost rule, the State commissions would have a rather onerous burden. They would have to fully satisfy themselves, following a full evidentiary presentation, following the development of the full record, that in fact it was appropriate to deviate from the rule presumptively set by Congress as correct. And I think, Senator, this presents a second problem that I think you would want to avoid.

If utilities firmly believe that in a particular instance a 100-percent rule would represent a windfall to cogenerators and deny to their customers the opportunity to share in benefits that they should share in, utilities would be obliged, because they have an obligation to cost minimize. They would be obliged to go before State regulatory commissions and contest the presumptive 100 percent rule wherever they believe it should be contested. And then you will see, Senator, that we will not have expeditious resolutions, even at the State level. We will have long drawn out proceedings before State commissions as utilities pursue the rights of their consumers as they must.

So I suggest to you that our urging of a 90-percent presumptive rule, if in fact there is to be a presumptive rule, truly is in the best interest, not only of expedition, but in the best interest of relieving cogenerators from the difficulties of long drawn out regulatory proceedings.

Senator **HUMPHREY**. Dr. Bjorklund, you said in your experience what some 60 percent of the agreements with cogenerators were at less than full avoided costs?

Dr. **BJORKLUND**. We've had 60 contracts signed for over 1,000 megawatts. Our track record for the last year or year and a half of that, we've averaged 93 percent of avoided cost. We have paid full avoided cost a half a dozen times, so that 90 percent of the contracts we've signed have been at a negotiated price. But it's important to recognize that there are times when it's appropriate to pay the full margin or avoided cost with emerging technologies when it's necessary for a levelized payment to equal that. We look at that. But our point is that it's not necessary to do it and our concern, as has been stated, when you pass legislation that says it will be avoided cost, you certainly are by inference indicating that that then becomes the floor and the ceiling.

Our experience is that doesn't have to be the case and certainly there are many benefits to the ratepayer and to the cogenerator to allow it to be good arms' length negotiation.

Senator **HUMPHREY**. In the proposed amendments we have explicitly stated on 7 through 13 on page 3, I don't know if you have a copy of those, but the language would specifically allow negotiated contracts with purchase rates different from those prescribed by FERC. So the point is that we are not mandating any hard and fast guideline.

From the point of view of your company, you consider that this amendment would be any more difficult to work with than the existing?

Dr. **BJORKLUND**. Yes, certainly from my interpretation of the amendments, you're giving the guidelines that it should be avoided cost except. And our feeling is, why do you need to have the presumptive indication and guidance? Why do you need to indicate that at all in the wording? Why don't we be silent on it?

Certainly the conference report when PURPA was created, Congress had intended that the avoided cost be only the ceiling, that it should be negotiated up to avoided cost and that there should be negotiation. There should be room for negotiation. As far as our interpretation of what your amendments are, you are certainly narrowing that room for negotiations and I'd like to mention, we certainly have confidence in our State commission although we've had disagreements with him on the interpretation, but in many cases they've been taking the guidelines from the FERC interpretation on mandating full avoided costs. So I really think the guidance and communication that you're giving the utilities commission and the utilities is heavy in the direction of full avoided cost.

Senator **Humphrey**. What would you suggest as an alternative? If the utilities don't begin with the avoided cost, where do you suggest they begin in dealing with cogenerators?

Dr. **Bjorklund**. Well——

Senator **Humphrey**. Isn't 90 percent just as arbitrary?

Dr. **Bjorklund**. Yes it is. It's a very arbitrary number and not one that we embrace with much appeal, but if there has to be some indication, in other words if there is not the willingness to allow it to be open negotiations, there is some feeling that there has to be a ceiling and a floor, then that's as good as anything. At least there we are communicating.

You, the legislature, Congress is communicating that the ratepayers should have some benefit in this move toward alternate and renewable resources. I will not ever accept the fact that it is necessary that we pay that maximum amount, that price that we are paying for low sulfur oil, and that we definitely require the ratepayers to in essence subsidize cogeneration and small power production at the cost of imported oil.

Our feeling is that yes there is benefit. Yes there is social benefit, there is environmental benefit, to move forward and reduce our oil dependency. But for heavens sakes give the ratepayers a break. All throughout the country they are being pushed, they are being dollared to death with all of these kinds of things. Put on additional air pollution controls, do this, do that, do the next thing.

Senator **Humphrey**. I didn't do any of those.

Dr. **Bjorklund**. Yes, well, besides the Public Utilities Commission, it's time that the utilities stand up and start defending our ratepayers and that's exactly what we're doing now. And quite frankly, Senator, if I may mention that we're getting bruised and battered because we're taking this position, and we have to ask ourselves, as far as the stockholders are concerned, as far as the earnings of our company are concerned, they aren't affected one bit, but we're taking the position that by golly we're going to champion the ratepayer.

Senator **Humphrey**. I have to admire your tactic there.

Mr. **Webber**. It's not a tactic. We have 187 companies in the investor-owned utility industry. We produce almost 80 percent of the electricity consumed in this country. We debated this issue and all of the other issues late into the night. And I'm going to tell you more and more you're going to see us coming up to this table, whether it's on standby, excuse me, whether it's on oil import fees or whatever.

We've really been jerked around long enough. And we've got to come up here on behalf of the consumer because we are the ones that sit at the table with those people who throw the bill on the table and are furious. And you've got a tiger by the tail on this one as far as the consumer is concerned. I come from your part of the country, and I know what the electricity rates are. I know how mad those people are. And if this kind of language goes through, you're going to aggravate an already serious situation. It's going to be a disincentive for our companies to get into the cogeneration business.

Glenn is on the frontline in California, but all of our companies are experiencing the same thing and we see the same potential here and that's why we are a little puzzled. Because we see a potential here for subsidies, and that's what concerns us and that's why we feel very strongly that if this kind of language comes out of this committee, that it's incumbent upon us, it's an obligation to vigorously oppose that language on behalf of the consumer. It's not going to touch the shareholder.

Senator **Humphrey**. You seem to be dismissing the traditional role of the State utility commissions to look after the interest of the consumers as well as that of the utility. They are not disinterested in the consumer. I can't fully accept your altruism here. As a matter of record I'm a very strong advocate of the free enterprise system, so I'm essentially on the side of industry that is serving the marketplace effectively. But I can't fully accept your argument in this case.

Let me interrupt my line of questioning at this point to welcome Senator Nickles. Do you want to make an opening statement?

Senator **Nickles**. No, Senator. I just wanted to participate and listen. Please proceed.

Senator **Humphrey**. Let's delve into the differences between avoided cost theoretically and actual avoided cost. The differences between full avoided costs and actual clearly identifiable costs.

Mr. **Garam**. I'd like to address that if I may. But before doing that I'd like to add a comment to what Mr. Webber said.

Senator, I'd like to invite you to attend a rate hearing in New York State and you will see the burden that is imposed on utility customers by ever increasing rates and requirements and the cost of new and additional requirements. It is a hardship for many customers to pay these utility bills, and we submit that in many cases cogeneration can be sufficiently encouraged at rates less than full avoided cost and to provide a windfall to cogenerators at the expense of ratepayers, I think requires some real question.

Now you expressed doubt as to, or question as to why the State commissions wouldn't protect the interests of ratepayers. I think the Federal statute as it stands would make it very difficult if not impossible for State commissions to fulfill their functions. The New York State Public Service Commission has already told Con Edison that it is unable because it is prohibited by Federal law, to consider fuel use. If you will recall the Federal Energy Regulatory Commission when it issued the regulations for implementing section 201 of PURPA refused to consider fuel use and take that into account in determining qualification.

The New York State Public Service Commission said, well we have no authority to deny PURPA benefits to those that use oil or natural gas and increase our oil imports because Federal law prohibits us from doing it.

With your amendment, if you give the weight to Federal authority and institutionalize FERC's full avoided cost rule, I would submit to you that would make it impossible for State commissions to set a rate other than full avoided cost. Although your amendment does give the appearance of permitting States to go below it, I submit to you that right is illusory because States will find it very difficult to implement it.

First of all they would have to find that a rate less than full avoided cost would be sufficient to encourage cogeneration and small power protection. The only way you can do that, or probably one of the only ways you could do that is to examine the financial condition of the potential cogenerator. While Congress said in 1978 that it does not wish for utility commissions to subject cogenerators to detailed cost of service type regulation, and unless you do that the State commission really cannot determine whether a rate less than full avoided cost will be sufficient to encourage cogeneration.

So the right to go below full avoided cost is illusory No. 1, and No. 2, it establishes a Federal law to full avoided cost as a presumptive right to be paid. So I think even if the State commission wants to protect—rates, that ratepayers under your amendment would find it very difficult if not impossible to do so.

Senator **Humphrey**. Dr. Bjorklund, I wonder if you could address this question. What have you found, what differences have you found between full avoided cost and actually clearly identifiable avoided costs?

Dr. **Bjorklund**. I'm having a hard time with the question. As far as the thing called full avoided cost, theoretically, it's that which you should avoid by bringing on cogeneration and small power production, and should avoid using the incremental fuel as being burned at a particular time, whether it be low sulfur oil or coal or natural gas. You should also avoid the additional capacity of that resource that you would be bringing on.

There is a big question regarding the capacity component of avoided cost. If you're paying for capacity tomorrow, that is a cogenerator for capacity in addition to energy, and you are not deferring any capacity until 5 or 6 years from now, should you be paying for capacity tomorrow or should you be paying for it 5 or 6 years from now?

We've worked out some formulas in negotiation that in order to give the cogenerator the benefit of costs early on in the project we will pay for capacity for let's say 15 years but amortize it over the 20-year period so they have the capacity credit tomorrow, but really it's 15 years' worth amortized over 20. So instead of saying we won't give you any money for capacity until 5 years from now, 5 years being the time which we would actually be able to defer the next increment of capacity that would come on the line. We certainly can't defer those projects that are under construction at this time.

I think we've worked out a reasonable formula now for what avoided cost is. We are having a lot of conversation with our State commission on a forward look versus a backward look as far as what fuel did we actually avoid. But one of the situations that we are facing is we've been 2 years trying to work out a lot of the complexity that goes on with the interpretation of PURPA and it seems now that we are just getting to the point where good, bad, or indifferent, we are all understanding it and working with the public utilities commission, and I might mention that we've had a lot of disagreements with them. We now have standard offers. We now have programs that I think are going to go forward.

I might mention one other thing that we've experienced recently that's worth your consideration. Paying full avoided cost was fine when we were looking at rapidly escalating fuel prices and when we were looking at 5- and 10-year fuel forecasts that were increasing 10 to 15 percent a year, there was an attractiveness of full avoided cost. We recently have had fuel forecasts and recently we've gone from oil being our avoided fuel to natural gas. And we see that the next several years we're finding that the avoided costs are flattening out and where we were looking at 8, 10, 12, 14, 16, up to 20 cents a kilowatt hour for avoided cost, now we're leveling at about 5, 6, or 7 cents and it's not as attractive to the cogenerator to pay the full avoided cost.

Negotiated contracts are going to become more attractive to the cogenerator than that which is pinned to straight forwarded costs.

Mr. **Garam**. Perhaps I could give an example.

Senator **Humphrey**. Yes. Let me say, the actual clearly identifiable avoided cost is that of Con Ed. They want some distinction between "full avoided costs" and "actually clearly identifiable avoided costs." Would you tell us what you mean by that?

Mr. **Garam**. Yes. Well, New York State is a good example where I believe that payments are being made or required to be made that exceed full avoided costs. And as Mr. Bjorklund mentioned, the problem is in the area of capacity credits.

The New York State Public Service Commission is requiring Con Ed to pay capacity credits for transmission, for supposedly avoided transmission capacity costs which in fact will not be avoided. Con Ed will be required to pay for capacity which may be wholly unreliable which a cogenerator undertakes no obligation to deliver and which may in fact not replace or substitute for any capacity.

If the cogenerator is unreliable and he doesn't undertake an obligation to provide capacity, it would be difficult or very imprudent for Con Edison, on the basis of that, to defer and avoid its expansion, or its planned expansion of transmission capacity. So we will not be able to avoid the transmission capacity expenditures.

Senator **Humphrey**. What has the New York Public Utility Commission said in response to that argument?

Mr. **Garam**. It said, it construed the Federal rule as permitting, if not suggesting, this result, and that's why we are seeking clarification of this troublesome provision. It's an extremely complex provision of the controversial version of the Federal rules that were promulgated, and I think it's been misinterpreted, again, probably because of the overall encouragement given to cogeneration from the Federal Government without appropriate safeguards. So we have run into this problem and we're urging that clarifying amendments be adopted here to prevent this.

Senator **Humphrey**. We appreciate suggestions. There's no pretention here of immortality and superior wisdom. We're all mortals and we're all trying to do a good job, and we're grateful for constructive, specific ideas and suggestions. Were not too grateful for intimidation.

Thank you very much.

We would like to submit additional questions to you in writing.

Our second panel is comprised of cogenerators and small power producers. Mr. Gordon Marker, National Alliance for Hydroelectric Energy; Mr. Michael Zimmer, Cogeneration Coalition who is accompanied by David Milne, vice president, Gas Energy, Inc.; Mr. Ronald J. Slinn for American Paper Institute; and Mr. Allan Thompson, Independent Power Producers Association.

Good morning gentlemen, we are grateful for your time and efforts. And I'd like to request that you keep your statements to 5 to 7 minutes if possible. Full statements will be included in the record.

And let us begin with Mr. Marker.

STATEMENT OF DR. GORDON A. MARKER, NATIONAL ALLIANCE FOR HYDROELECTRIC ENERGY

Dr. **Marker**. Thank you Senator. I represent the National Alliance for Hydroelectric Energy. We have prepared a statement which I would like to submit for the record. Rather than read it I would like to make two or three comments.

I'm very pleased to learn that the public utility industry as represented by the previous speakers are fully protecting the interests of the American consumer. I find it a little strange, however, that we are the enemies—whether we be independent power producers in the form of hydroelectric generators or cogenerators. It seems a little incongruous given the experience of at least our industry in the last several years.

I think the point has to be made that the electric utility industry represents a market forming force which economists call monopsomy. And what they are attempting to do is to essentially prevent the free market or freer market from operating in the electrical generator industry as it relates to hydropower and the other small scale energy sources.

I think that the evidence for that and the use to which they are using the AEP case is very well evidenced in the quick attempt that was made to say in effect in the State of New York, hey look, if you cannot decide what is an appropriate full avoided cost, because look at what has happened in the remand of the notion of avoided costs at the Federal level, that is, don't do anything because it has been remanded back to the FERC.

What that really does to the small power producer is two things. One, it creates enormous uncertainty as regards financing, and two, it effectively eliminates, or certainly it dampens, the ability of the small power producer in the hydro industry at least, to take advantage of the present 11-percent energy tax credit that expires in 1985.

So I would like to suggest that all of the arguments about the desire on the part of the utility to protect the interest of the consumer does have another dimension and it really has to do with the ability of nonutilities to enter into a market which traditionally has been controlled by the monopsonists.

Therefore, the National Alliance of Hydroelectric Energy supports in the main, it certainly supports the tenor and the thrust of the proposed legislation. We have a couple of small problems that I would like to make a modest suggestion about. But in the main we think the ownership issue, at least at the Federal level as in the legislation is not inappropriate at least as regards hydropower. We think the interconnection requirement is on target. We think that was the intent of the original legislation. We think the attempt to have a legislative remedy in the face of the delay on the part of utilities and the legal process that is moving forward in the courts, I think is quite appropriate, to have the Congress of the United States define what we think was really intended in the first place and do it fairly concretely.

A couple of other points I would like to make in response to what was previously stated, simply by way of clarifying what the real world is out there when you look at the little person who is trying to put in a small scale hydroplant. One is there is no elimination of negotiated price at less than full avoided cost or more than full avoided cost and I think those are looked at on a case-by-case basis with the utility. And our members find that in those utilities that are really serious about getting capacity on line, off balance sheet, they are more than happy to enter into a negotiated contract. Your bill does not preclude that in any way, shape, or form, as our people read it.

Another point is we've heard repeatedly, that the earnings of the shareholder are not affected. I would like to suggest that that may not be the whole story. Part of the willingness on the part of utilities to delay implementation on PURPA I think is predicated on exactly the opposite. They don't earn unless it's in their rate base.

Small power producers create capacity by definition. It does not get into the utility's rate base. Therefore, the earnings can be affected adversely by the extent to which small power producers create capacity.

A couple of points on the legislation. We would suggest that there be on the rate side of your equation some means by which an aggrieved or collection of aggrieved small power producers might also seek remedy before the FERC as you have provided for the State agencies in the case of interconnection.

Thank you very much.

[The prepared statement of Dr. Marker follows:]

Testimony

of

Dr. Gordon A. Marker

National Alliance for Hydroelectric Energy

May 24, 1982

Before the
Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
U.S. Senate

TESTIMONY SUMMARY

Representing approximately 200 entities in 23 states, the National Alliance for Hydroelectric Energy fully supports the interconnection and avoided costs provisions of S.1885, while suggesting only a minor change in the avoided cost section. The Alliance must oppose ownership provisions of S.1885 for these reasons:

- o Given the wide-spread financial difficulties found among utilities, granting them full ownership of qualifying facilities is unlikely to stimulate site development beyond the levels proposed by independent power producers;
- o Extending full ownership of qualifying facilities to utilities would allow them the full exercise of their monopoly powers in small power production and cogeneration, a situation PURPA was specifically designed to remove;
- o Utilities could, under S.1885, hinder the development of independent power production by maintaining artificially low "avoided costs," a practice already reported by Alliance members.

Our proposed alteration to S.1885's "avoided cost" provision would allow small power producers to appeal "avoided cost" determinations to the FERC, a procedure already in place for interconnection rulings.

Speaking for all aspects of the hydroelectric industry -- including equipment manufacturers, site developers, construction firms, and municipalities -- the Alliance compliments the Committee on its timely review of certain attempts to overturn PURPA through the courts. It is a complex subject with numerous, intertwined issues which have been well-served by the Committee. We hope our comments will serve as a useful contribution to the Committee's deliberations.

Thank you.

TESTIMONY OF NATIONAL ALLIANCE FOR HYDROELECTRIC ENERGY

The National Alliance for Hydroelectric Energy is pleased to present testimony today regarding S.1885. We feel the Alliance can provide useful insight into the proposed legislation given our position representing a broad range of non-utility, hydroelectric power producers.

The Alliance represents approximately 200 entities involved with hydroelectric project development. With members from 23 states, we speak for all aspets of the industry including equipment manufacturers, site developers, construction firms, and municipalities. Growth of the Alliance from a handful of members in 1980 to our present level parallels hydropower development's rapid acceleration, and it is from direct involvement with the industry's requirements that I make the following comments on S.1885

The Public Utility Regulatory Policy Act (PURPA) has been an important factor in stimulating hydropower development. Industry growth has occurred because PURPA weakened the market domination that inhers in our system of electrical purchase and distribution. Previously, utilities tended to become both the sole purchaser and seller; or as economists term it, both monopolist and monopsonist.

PURPA reestablished a wider range of market forces into the energy supply equation. In the short history of the legislation, the market has responded and an old technology has been revived. Dams are being refurbished. Factory sites are being retrofitted with new equipment. Small diversion structures are being planned at high head sites in the Far West. Private and municipal developments are underway at Federal dams of both the Corps of Engineers and the Bureau of Reclamation. Some new dams are even in the works. And perhaps most significant, joint ventures are evolving between local, public entities and private developers.

In the aggregate, revival of the hydro industry can represent as much as 10,000 megawatts of new capacity. This is significant, not only because of size, but also becasue of hydro's short lead times. Among FERC-licensed energy sources, hydro projects can be put on-line much more rapidly than coal or nuclear steam plants.

PURPA, by reintroducing market forces in electric power generation, has been important in this process. It has not, however, been the sole stimulant. Consider these aspects of the incentive structure:

- An 11% energy tax credit on top of the 10% investment tax credit;
- Depreciation treatment -- a tax life that has been reduced from about 40 years to 5 years for non-utility property;
- Rapid escalation of oil prices between 1973 and 1981;

- Pending deregulation of natural gas;
- Delays, and in some cases moratoria, on major nuclear stations -- representing more than 5,000 MW in New England and Washington state;
- Significant productivity increases in the FERC hydroelectric licensing process.

Since the list of good news for hydropower is impressive, why, one might ask, improve PURPA and the other stimulants? The response is that the bad news is long and pervasive. Most problems have to do with financial feasibility of hydro projects. Consider the following:

- There is virtually no long-term capital market, and little of the shorter term debt is available at fixed rates;
- PURPA constitutionality has been challenged in the *Mississippi* case;
- Utilities at the Federal level have successfully challenged "avoided cost" and "interconnection" provisions of Section 210;

- In the states, utilities are quick to extend their attack on "avoided cost" to state regulatory bodies -- -- they argue that, since the issue has been remanded back to the FERC, by Federal Court, full avoided cost cannot be implemented by state public utility commissions;

- In the international arena, the near-term price of oil has materially softened. Supplies are only now being reined in by the cartel. And significant strengthening of the dollar, OPEC's unit of exchange, has created more value on current account in their balance of payments;

- "Avoided cost" levels, as a consequence, are being reduced in several states.

Together, these factors significantly erode the hydro industry's ability to finance projects. Even in the face of otherwise strong economic viability, many hydro sites are going undeveloped.

Delays following from the AEP case, if continued, will cancel out energy tax credit benefits. That window closes after 1985, in any case. At that time, large power producers will have the ability to keep independent hydropower producers in the wings, if not out in the cold.

Let me now turn to specific provisions of S. 1885.

Our Alliance supports provisions of S.1885 regarding interconnection and avoided costs; however, we suggest a slight change on the latter. The ownership issue is another matter. There are several matters to consider:

First, PURPA is designed, in part, to encourage a freer market on the energy supply side. If utilities are accorded full ownership of qualifying facilities as proposed in this Bill, what is to prevent full exercise of the utilities' monopoly power?

Second, is entry of investor-owned utilities -- through wholly-owned small power producer subsidiaries -- likely to produce new hydroelectric capacity? Answering in the affirmative suggests that allowing ownership beyond the present 50-percent cap will enhance the financial attractiveness of small power production at hydroelectric sites.

I suggest that just the opposite is the more usual case. Utilities are generally faced with stock prices significantly less than book value. This limits their ability to raise equity. On the debt side, particularly for utilities with large commitments in delayed nuclear facilities, access to the long-term debt market is in the same dismal state confronting independent hydro developers. And finally, tax losses cannot be efficiently utilized on the typical utility's balance sheet. Clearly, utilities possess no financial advantage over private firms in developing hydroelectric sites.

And third, under the proposed PURPA ownership change, there is real danger that utilities will hinder independent power producers by maintaining artificially low system "avoided cost". For example, our members report that utilities tend to understate operating costs by several orders of magnitude. The utilities fail to allocate administrative costs fully, or at all, to specific hydro sites. The cost is still there, but it tends to be classified as general overhead. This cannot be done by independent, small power producers.

Finally, it can be illustrated that the ownership provisions of the Bill focus principally on cogeneration. This is correct on it face. However, any state regulatory commission can raise the ownership limit. In essence, what is carefully protected at the Federal level can be eliminated on a state-by-state basis.

Our Alliance supports S.1885's reaffirmation of full avoided costs and urge its adoption. It should be strenghtened in one particular area. Let me illustrate with what I hope is an extreme example:

Suppose a Federal power marketing agency sets the market tone -- i.e. the "avoided costs". While the marketing agency does not really fall under the jurisdiction of PURPA, the level determined by the agency could become the regional value for avoided costs. In this setting, both the marketing agency and the utilities share an incentive to have low costs.

What is the remedy at hand in S.1885? As previously drafted, interconnection actions taken by a state regulatory body can be appealed to the FERC. We suggest, as an addition, that small power producers be allowed to initiate an appeal to the FERC in the event of state or national regulatory level disputes as to the level of full avoided costs.

Finally, our Alliance applaudes the work of this Committee in promptly addressing certain attempts to overturn PURPA through the courts. You and your staff, have done an excellent job in fairly addressing a complex subject where a variety of interests intertwine and conflict. We hope our comments will be taken as useful additons to a Bill that is important both in continuing the momentum of hydroelectric power development and in lessening our dependence upon offshore energy resources.

Thank you.

Senator HUMPHREY. Mr. Zimmer.

STATEMENT OF MICHAEL J. ZIMMER, COGENERATION COALITION, INC., ACCOMPANIED BY DAVID MILNE, VICE PRESIDENT, GAS ENERGY, INC.

Mr. ZIMMER. Thank you, Mr. Chairman. My name is Michael Zimmer. I'm here representing this morning the Cogeneration Coalition. I'm accompanied this morning by Mr. David Milne, vice president of Gas Energy, Inc., a wholly-owned subsidiary of Brooklyn Union Gas Co. and one of the members of the coalitions; a company engaged in the sale of cogeneration equipment nationwide, the selective provision of financing services on various cogeneration projects, and the manufacturing and sale of special equipment for gas-fired cogeneration facilities in particular.

I'd like to briefly summarize our statement in about 2 or 3 minutes and then provide the rest of my 4 minutes or so remaining to Mr. Milne to share directly with you, Mr. Chairman, some of his specific experiences working nationwide in this area. We submit from the outset that the group of various industrial users, developers, and associated companies that we represent have approached the issues raised in the committee from a spirit of cooperation and a spirit of compromise.

We have reviewed the issues of fuller electric utility ownership associated with qualifying facilities and have responded thereto. We have discussed the issues associated with oil- and gas-fired cogeneration with committee staff. We'll be glad to discuss that matter in a more detailed fashion on the record.

Third, we submit that we have not pressed the case associated with issues raised by wheeling of electric power generated by qualifying facilities. And fourth, we have not sought changes to cooling practices to enhance the prospects for cogeneration.

Thus the issues really raised in the committee print at this time constitute a minimal agenda to address continued development of cogeneration and small power production facilities consistent with the underlying goals and objectives established by this very same committee in PURPA in 1978.

Specifically, in terms of recommending modifications or improvements to the committee print, initially we would suggest that the committee and its staff focus on the NARUC amendment and the approach to ownership therein.

Second, we would suggest some technical modifications in the rates for purchase provisions in section 3 of the committee print which are contained in our statement in greater detail. And third, particularly in the area of interconnection we would make three suggestions.

No. 1, we would suggest that the committee specifically provide that the FERC initiate the rulemaking dealing with interconnection which would be created by the committee print no later than 90 days after enactment of that subsection.

No. 2, we would suggest that the statutory language specifically provide that the State FERC dispute resolution procedure shall be on an informal basis and be handled on an expedited basis subject to some consistency changes with provisions of the Federal Power Act.

And third, we suggest that section 4 specifically make clearer than it does currently that sections 210, 211, and 212 of the Federal Power Act are not intended to apply to the interconnection of such qualifying cogeneration and small power production facilities.

At this point I'd like to turn the remaining balance of my time over to Mr. Milne as I previously stated.

[The prepared statement of Mr. Zimmer follows:]

WRITTEN TESTIMONY
OF
MICHAEL J. ZIMMER
ON BEHALF OF
THE COGENERATION COALITION, INC.
ON THE
CLARIFICATION OF INCENTIVES FOR COGENERATION AND SMALL POWER PRODUCTION
BEFORE THE
SENATE ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON ENERGY REGULATION
MAY 24, 1982

WRITTEN TESTIMONY
OF THE
COGENERATION COALITION, INC.
ON THE
CLARIFICATION OF INCENTIVES FOR COGENERATION AND SMALL POWER PRODUCTION
BEFORE THE
SENATE ENERGY AND NATURAL RESOURCES SUBCOMMITTEE ON ENERGY REGULATION
May 24, 1982

The following written testimony is filed on behalf of the Cogeneration Coalition, Inc. on the clarification of incentives for cogeneration and small power production and the issues raised in this regard as contained in the Committee Print of S.1885 currently pending before this Subcommittee. The Cogeneration Coalition, Inc. (Coalition) is a non-profit organization comprised of interested natural gas utilities, industrial users, industrial equipment manufacturers, project developers and engineering and construction consulting firms.*/ The Coalition has also established advisory working relationships with other public interest groups and national trade associations on issues affecting cogeneration development. The Coalition supports the provision of necessary financial and tax incentives to promote the utilization of cogeneration technology and the removal of unnecessarily restrictive federal barriers to the development of cogeneration potential nationwide.

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*/ The current membership of the Coalition includes: Kimberly Clark Corp., Brooklyn Union Gas Company, Great Lakes Carbon Company, Daverman & Associates, Entek Research, Inc., National Urban Energy Corp., Energenics Systems, Inc., Williams & Works Industrial Co-Energy Systems, Inc. and Enegrid Investments, Ltd.

Introduction

Cogeneration is one of the foremost technologies for the efficient use of energy currently available in the United States. It involves the sequential use of energy to produce electricity or mechanical shaft power and some other useful form of energy (usually heat or steam) from the same energy source. Major potential exists in the wood and pulp, steel, food processing, chemical and refining industries for the application of this technology. Other potential applications include water desalinization plants, multi-family residential and commercial complexes, universities, hospitals and military bases.

The real issue before this Subcommittee today putting aside the technical issues of full avoided cost, interconnection, and utility ownership policies raised within the Committee Print is: what course of action must the Congress take to ensure the continued development of national cogeneration resources in a manner consistent with the underlying goals and objectives established in 1978 in PURPA, prudent project design and development requirements, underwriting requirements of the financial community, and national electric utility management and operational procedures.

The expectations of Congress when it passed PURPA and the almost 4,400 MW of power it currently has provided from cogeneration and small power production facilities (with the substantial potential yet to unfold) have recently been eroded with the uncertainty and instability in the marketplace fostered by recent judicial and legislative developments. This does not serve the national interest nor does it serve the interests of cogeneration project owners and developers as well as ratepayers of the electric utilities. Hence, increasing numbers of prospective cogeneration projects cannot rely upon the guidelines and regulatory requirements established by PURPA. The uncertainty engendered by the recent decision in the American Electric Power case could also have the effect of delaying connections with qualifying cogeneration facilities and potentially reducing the rates utilities are required to pay such producers of power. These types of developments do not offer the stability and certainty to encourage potential financiers to invest in cogeneration projects for the future.

Key Considerations

The issues raised in the Committee Print today really center upon several important considerations:

1) Who should have the leveraged position in bargaining for electric power being made available by such qualifying facilities?

2) Should the benefits provided by such power be offered solely to project developers or should they be shared with ratepayers of the electric utility?

3) Can this legislation be framed in a fashion to facilitate understanding and cooperation in the bargaining process between qualifying facilities and electric utilities to ensure development of full cogeneration potential?

4) Can the implementation efforts and achievements recognized in over 34 states be preserved through this amendment process?

5) Can development of these projects occur and be framed in a fashion which does not pose a competitive threat to the electric utility industry?

6) Can PURPA be amended in a manner which does not pose the prospect of creating a burdensome regulatory regime which stifles project development and is contrary to the original deregulation objectives of the Act?

7) Should cogeneration project development proceed free of burdensome and unnecessary fuel use restrictions?

8) What proper balance must be achieved between federal requirements and the legitimate state interests in issues as utility ownership, full avoided costs and interconnections?

The answers to these questions will ultimately determine the appropriate technical choices raised by the provisions in the Committee Print. Whatever those choices are, they must proceed from a perspective of removing unnecessary barriers to the full development of cogeneration potential nationwide.

Conclusion

The Coalition submits that these issues have been approached from the outset by industrial users, project developers and associated companies in a "spirit of compromise." We would accept some form of potential electric utility ownership of such qualifying facilities under appropriate circumstances as determined by the jurisdictional state commission. We have discussed the issue of fuel use and the concept of net oil and gas savings for oil and gas-fired cogeneration with some degree of misgiving and uncertainty even though this issue was addressed and sustained in the *American Electric Power* decision. We have not pressed at this time the case for wheeling of electric power generated by qualifying facilities for sale to third party utilities, for use at other facilities controlled by the cogeneration facility, and for sale to non-utilities not controlled by a cogeneration facility. Finally, we have not sought changes to pooling practices and requirements between interchanges to enhance the prospects for development of economical projects. Thus, the issues raised in the Committee Print constitute a minimal agenda to assure the continued development of cogeneration projects consistent with the goals and objectives of PURPA.

PURPA stands at a major crossroads before this Subcommittee today. The decisions which are made on these issues this week will affect the future of the development of desirable cogeneration projects offering efficiency, energy productivity, self-sufficiency, competitive and other important national benefits for long-term economic recovery and national independence.

No one group appearing today has a corner on the market for answering all of these questions. However, working together with this Subcommittee in support of this Committee Print and the efforts of the Subcommittee chairman and staff can provide a basis for long-term benefit and understanding in support of national cogeneration capabilities for the next decade leading to the potential development of $20-$30 billion of these projects. Otherwise, this legislative effort to address the problems raised by the American Electric Power case will fail because of lack of good faith and cooperation in resolving mutual concerns.

On behalf of the membership of the Coalition, we thank you for the opportunity to testify today and would be pleased to answer any questions you might have. To continue our efforts to assist the Subcommittee staff, we are also enclosing technical recommendations to the Committee Print for your consideration.

Cogeneration Coalition, Inc.
1828 L Street, N.W.
Washington, D.C. 20036
Phone (202) 887-5200

May 21, 1982

Recommended Modifications to Committee Print

1) Strike Sections 1 and 2 and substitute in lieu thereof the NARUC amendment as presented on April 19, 1982 dealing with electric utility ownership subject to the additional comments provided by the Cogeneration Coalition for the record on May 5, 1982.

2) Amend Section 3 as follows:

> "(b)(1)...
> from any qualifying facility shall be the full avoided cost of alternative electric energy provided by the qualifying facility to the purchasing electric utility, unless a State agency, or a nonregulated electric utility, establishes a different rate of prospective application only ... consistent with the public interest and the interests of the electric consumers of the electric utility....

3) Amend Section 4 as follows:

> To specifically provide that the Commission shall initiate such rulemaking dealing with interconnection no later than ninety days after the date of enactment of this subsection.
>
> To specifically provide that the State/FERC dispute resolution procedures shall be informal and shall be handled on an expedited basis. Furthermore, such dispute resolution procedures shall relate to any of the matters referred to in subparagraphs (A) through (D) of section 210 (a)(1) of the Federal Power Act.
>
> To specifically make clear through addition of a subparagraph (4) providing that Sections 210, 211, or 212 of the Federal Power Act are not intended to apply to the interconnection of such qualifying facilities.

Senator HUMPHREY. Mr. Milne.

STATEMENT OF DAVID MILNE, VICE PRESIDENT, GAS ENERGY, INC.

Mr. MILNE. Thank you, Mr. Chairman.

We would like to discuss the interconnection, avoided costs, and then fuel use in that order.

Interconnection in our opinion is the most important aspect of promoting future cogeneration activities in the country. Without interconnection the capital cost to a potential cogeneration project is increased by approximately one-third because of the need to provide standby electric generating facilities themselves.

Therefore, the threshhold for making a positive decision on the cogeneration plant has increased by that amount, so that many cogeneration plants would not go if they were not allowed to interconnect. And we have found this to be very true in New York City where we do most of our business.

We have a significant number of cogeneration plants, none of which have been allowed to interconnect and they've always felt that a great deal more would have been put in place had interconnection been permitted.

I would point out that those opposed to cogeneration use the interconnection argument to hide behind the banner of the reliability. The cogenerators that we have been associated with have had a track record of much greater reliability as far as electric supply to themselves, than their neighbors receiving utility service.

This has been documented in numerous studies.

As far as the *AEP* case which would require separate hearings on each interconnection, I'm certain that's infeasible because most cogenerators would not wish to go to the expense, the legal expense of mounting an interconnection application for themselves. And I notice that two of the dissenting judges felt that even streamlining interconnection procedures was not feasible and therefore would be a great impediment to future cogeneration projects.

I should also like to point out that no one ever thinks of compensating the cogenerator for not increasing electric demand on the public utility system. It certainly is a fact that the utility and its ratepayers will not be required to raise the debt and equity capital to provide for that particular chunk of electric demand in the future.

Turning to avoided costs, again I would like to state that the potential cogenerator who probably has not identified himself at this point in the game, certainly will not bother the public utility hearings as to what avoided costs should be or will be. In fact, avoided costs become a contest between those electric utilities participating in the case and the staff of the commission and virtually precludes the normal adversary proceedings that occur in the utility regulatory process at the State level.

Finally, as far as fuel use is concerned, I must state emphatically that gas is not oil, and that the use of gas for cogeneration will not increase imported oil in the United States. In fact, the American Gas Association is confident of the gas supply that is now being discovered at virtually record rates and is certain that there will be adequate gas supply for cogenerators for the remainder of the century.

Thank you.

Senator HUMPHREY. Mr. Slinn.

STATEMENT OF RONALD J. SLINN, VICE PRESIDENT FOR ENERGY, AMERICAN PAPER INSTITUTE, ACCOMPANIED BY JOHN T. FERGUSON II, LEGISLATIVE COUNSEL, GEORGIA-PACIFIC CORP., AND RIGDON H. BOYKIN, API COUNSEL

Mr. SLINN. Thank you, Mr. Chairman. I'm Ronald Slinn and I have with me Mr. Ferguson of the Georgia-Pacific Corp. and Mr. Boykin, attorney to the American Paper Institute. We represent the members of the American Paper Institute, the National Trade Association of the pulp, paper, and paperboard industry.

I plan to highlight the paper industry's positions on the issues raised by the proposed amendments to S. 1885.

As my formal statement you have indicates, the paper industry is especially well qualified to comment because of its considerable and long experience with cogeneration and hydropower production. In addition to being the Nation's largest cogenerator, the paper industry also ranks third among U.S. manufacturing industries in purchased electricity consumption.

I point out, Mr. Chairman, that more than half of the paper industry's current energy source is based on nonrenewable residue fuels.

We believe that Congress had entirely the right ideas when it enacted PURPA in 1978. It provided appropriate measures to encourage the most efficient production of power while also providing for benefits to flow to the ratepayer, to the cogenerator, and to the utility. Four years later, PURPA has not been fully implemented because uncertainties have been created by the *AEP* case, by the Mississippi challenge, because a number of States have yet to move on adopting the original provisions of PURPA, and because, in the paper industry's experience, many utilities are unwilling to negotiate in good faith with potential private cogenerators and small power producers.

Our industry has endeavored to resolve some of the problems through direct negotiation with the utility industry, but these efforts have, to date, not been fruitful. We will, however, continue to seek compromises with which both industries can live, based upon appropriate give-and-take, and consistent with the most efficient power production at the lowest cost to consumers.

We applaud the efforts of this subcommittee to remove several of the key obstacles which have hindered private industry from contributing to the Nation's future needs for electricity as PURPA intended. The remedies certainly include Congress restating and reinforcing its original intentions.

The paper industry supports in concept the proposed amendment on interconnection. Our more detailed views on this issue are in our formal statement but we believe that the amendment, as drafted, will effectively remove the uncertainty created by the court's decision in the AEP case while insuring the reliability and safety of a cooperative venture between a private power producer and a utility.

The most difficult hurdle in the implementation of PURPA is unquestionably the price which would be paid to a cogenerator or small power producer.

The paper industry favors reinstatement of the existing FERC rule through legislation.

Full avoided cost assures the maximum level of private cogeneration, and the ratepayer will pay no more for his power than if the utility had generated the power or bought it from another utility.

We therefore support that part of the proposed amendment which would set a full avoided cost standard at the Federal level, but there are major problems inherent in the proposed provisions to allow States and nonregulated utilities to establish rates different from full avoided cost.

Any revision from the existing FERC full avoided cost rule which has been implemented against State commissions will result in further and serious delays in cogeneration development because States would be forced to undertake completely new rulemaking proceedings which, in our view, could take at least 2 years.

Such a step at this time would eliminate any possibility of a quick resolution of the current uncertainty. The further delays would not only postpone the benefits to the Nation but would lock in a permanent loss as private industry makes irreversible investment decisions to exclude cogeneration or hydropower production from the design of new or retrofitted plants.

As we point out in our formal statement, the paper industry is particularly concerned about the role of nonregulated utilities on this issue because they are not only the determinator of what full avoided cost is, but also the utility making the purchase. In our view, FERC should oversee the avoided cost, related actions of otherwise non-regulated utilities, for the reasons given in our formal statement.

Finally, I would draw your attention to the complication which would result if a State commission were to adopt a rule in the future which lowered the rate for a cogenerator to below full avoided cost and applied it to a facility built years earlier to which a full avoided cost rule had been applied. In these circumstances, the private investor would be unfairly subject to a regulatory risk in addition to his fundamental business risk.

[The prepared statement of Mr. Slinn follows:]

DRAFT

STATEMENT OF THE AMERICAN PAPER INSTITUTE TO THE SUBCOMMITTEE ON ENERGY REGULATION CONCERNING THE AMENDMENT TO S. 1885

I appreciate the opportunity to present to the Senate Subcommittee on Energy Regulation the views of the U.S. paper industry on proposed amendments to the bill, S. 1885, pending before Congress.

My name is Ronald J. Slinn. I am the Vice President of the American Paper Institute responsible for energy. Accompanying me is John T. Ferguson, II, Legislative Counsel for Georgia-Pacific Corporation, and Rigdon H. Boykin, API Counsel, from the firm of Chadbourne, Parke, Whiteside & Wolff.

The American Paper Institute is the national trade association of the pulp, paper and paperboard industry in the United States, consisting of 175 manufacturers that produce more than 90% of the nation's pulp, paper and paperboard output. As this Subcommittee has already heard in API's earlier testimony, the U.S. pulp, paper and paperboard industry is the nation's leader in cogeneration and self-generation of electricity, and has the potential to expand its capacity significantly under the program established by Sections 201 and 210 of the Public Utility Regulatory Policies Act of 1978 (PURPA) and the Federal Energy Regulatory Commission's (FERC) rules implementing PURPA. Conservative estimates based on a recent API survey of its members reveal the paper industry's current cogeneration capacity to be in excess of 3,500 megawatts with the potential to increase this capacity by 40 percent over the next five years, assuming that the FERC's rules are in effect for this period. The industry's hydropower generating capacity is estimated at 425 megawatts with the potential to increase it a further 45 percent by 1987 under the same assumption.

The primary purpose of Congress in establishing a program under PURPA to promote increased development of cogeneration and small power production was to take advantage of the greater efficiency inherent in cogeneration facilities over conventional electric utility generating facilities, and to substitute renewable resources for fossil fuels. Benefits to society would include a reduction in domestic fossil fuel consumption and petroleum imports, a concomitant improvement in balance of payments, increased national security, and a better environment. Additional benefits to the electric generating system are shorter lead times in adding generating capacity to the grid and increased reliability of the system provided by a variety of renewable technologies. All of these benefits would accrue to the country at no additional cost to electric consumers.

The January 22, 1982, decision of the United States Court of Appeals for the District of Columbia Circuit, which struck down two rules of the Federal Energy Regulatory Commission (FERC), is discouraging increased cogeneration and small power production and their consequential benefits to the nation. The uncertainty caused by the Court's vacation of the avoided cost and interconnection rules has added to the existing difficulties encountered by industrial cogenerators and small power producers. Compliance with Sections 210 and 212 of the Federal Power Act (FPA) as required by the Court decision could result in lengthy and costly administrative delays in order to obtain an interconnection order. Under these circumstances, few, if any potential private generators are going to make significant investments. Similarly, the purpose of the PURPA cogeneration provisions, to encourage production of the maximum amount of private power possible without increasing costs to electric consumers, cannot be achieved as long as the full avoided cost rule remains in doubt.

AVOIDED COST PROVISION

The experience of the pulp and paper industry indicates that, in most instances, it was not until after mid-1980, when the FERC rules were promulgated, that the new avoided cost price signal, designed to encourage the development of more private generation, began to be a factor in industry planning. Even at that point, the executives with responsibilities for capital budgets were still hesitant to make commitments because state commisions still had to act. Before 1981, there were instances where a favorably disposed utility, state commission, or a state "mini-PURPA" provided the cogenerator or small power producer with sufficient confidence that a satisfactory full avoided cost price would be offered to warrant further development. However, it was well into 1981 before most corporate engineering departments were actually starting to consider seriously the economics of the additional cogeneration that could be warranted by the avoided cost price required by the FERC rules. Bear in mind that since the paper industry has always been a cogenerator, largely supplying its own electricity needs, the new question confronting the industry has been whether additional expenditures should be made, as plants are modernized or new ones built, so as to produce more electricity than would have been warranted in the past.

Clearly, the AEP decision came at a critical time — just as most engineering departments were getting serious, just as state rules were being finalized. Some 34 states have cogeneration rules in effect now or have issued proposed rules. Add to this confusing situation the prevailing and related uncertainty over the future price of fuels generally, and it is not surprising that few corporations are now going to make the new investments that PURPA was designed to encourage.

The AEP case really created two distinct problems for cogenerators and small power producers. The first is delay. In the absence of action by Congress to put us back where we were on January 21, before the AEP decision, it is likely to be about two years — and it could be longer — before the major regulatory and judicial proceedings that lie ahead are completed. The second major problem is that we have no assurance that, at the conclusion of the federal and state commission or non-regulated utility proceedings to follow remand of the full avoided cost rule to the FERC, the substitute rule will be sufficient to attract all efficient cogeneration and small power production.

The Congress has an opportunity to resolve these two problems, and we appreciate your subcommittee's efforts in looking for that resolution. There are, however, certain matters that in our view require clarification or perhaps modification if the amendments are to achieve their purposes.

The paper industry believes that it must be made clear that the basic goal of PURPA Section 210 is to secure certain non-rate benefits to the nation, such as reduced oil imports and environmental impacts, at no cost to the ratepayer, and that it is within this framework that state commissions and non-regulated utilities are given limited latitude to reduce rates below full avoided cost.

The paper industry is particularly concerned about the non-regulated utilities on this issue. Under the original PURPA implementation scheme, non-regulated utilities were given a dual role, with an inherent conflict: non-regulated utilities are both the regulatory commissions making the determiniation of what full avoided cost is and the utilities making the purchase. The proposed amendment would make it possible for states and non-regulated utilities to lower the price without the grant of a waiver by the FERC as required by the present rule. The paper industry does not disagree with the observation that state and local regulators are more familiar with particular situations and better able to correct or fine-tune the program if anomalies should develop. But the basic thrust of the program -- to encourage all economic cogeneration and small power production -- should be established as part of the framework within which the states and non-regulated utilities act in fixing the rate for cogenerators and small power producers. Further, there should at a minimum be a clear right of appeal to the FERC if a decision to require a lower price is inconsistent with the basic purpose of the statute.

API is also concerned that the solution to the problem of delay in itself contains the seeds of further delay. In particular, if there should be any colorable argument that states and non-regulated utilities have an obligation to reconsider the full avoided costs rule (rather than just an opportunity to do so in certain situations), then there will be continued uncertainty and delay, either because new proceedings will be started or because of litigation over whether they should have been started.

In short, in order to solve the problem of continuing uncertainty and delay, the legislation must establish a clear legal "safe harbor" for initial state commission and un-regulated utility regulations that embody the FERC rule overturned by the Court of Appeals.

In this connection, Mr. Chairman, I should point out that the consequence of continued uncertainty is not merely the postponement of the benefits to the nation of cogeneration and small power production; rather, more often it means a permanent loss. Every day American industry makes final decisions on the design of new or retrofitted plants. If the doubt as to the existence of an adequate market for cogenerated power is too great, the irreversible decision will be made not to spend the extra money to build in such a way as to take full advantage of the opportunity to cogenerate. This is particularly true in a time of tight money, high interest rates, and low profits.

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There is one final potential problem raised by the device of giving states and nonregulated utilities authority to set a price at less than full avoided cost without prior FERC approval. That is the question of the affect of such a new rule on the rates paid to qualifying facilities built before the change in rules. This is a problem that exists whether or not the qualifying facility has a long-term contract with a purchasing utility.

Qualifying cogeneration and small power production facilities appropriately have neither the burden of regulation nor the safety net of a constitutional guarantee or an adequate return on investment. As business people, the pulp and paper industry and others involved in cogeneration and small power production are perfectly willing to assume the risks presented by, for example, volatile fuel prices and difficult-to-predict demand for electricity and a concomitant drop in a utility's avoided costs. But if a state commission, for example, were to adopt a rule in 1985 to lower the rate for cogeneration below full avoided cost and it made it applicable to a cogeneration facility built in 1984 under a full avoided cost rule, then the cogenerator has become subject to a regulatory risk as well as a business risk. The prospects of such devastating and inequitable future regulatory actions would have a great chilling effect upon the development of cogeneration and small power production.

INTERCONNECTION

The paper industry supports in concept the proposed amendment to S. 1885 requiring any electric utility to offer to interconnect with a cogenerator or small power producer. The assurance that a private power generator can transmit his power to the grid is an important element of security for the potential cogenerator or small power producer.

The invalidation of the FERC rule allowing cogenerators to obtain interconnection with utilities without submitting to the elaborate adjudicatory procedures established by

Sections 210 and 212 of the Federal Power Act (FPA) is troublesome indeed. The Court interpreted PURPA Section 210 and these sections of the FPA to mean that the FERC could order interconnection only after conducting full evidentiary hearings and finding that the interconnection would meet the guidelines set forth in FPA Sections 210 and 212. The prospects of encountering this time consuming and costly procedure will discourage, intimidate and frustrate potential cogenerators and small power producers. In addition to this obstacle, state commissions are encountering the argument by some utilities that the FPA preempts existing state rules on interconnection. The paper industry disagrees with this analysis, but the merits of the legal question are of less importance than the further uncertainty created by the unsettled state of the law.

Sections 210 and 212 of the FPA are operative in a situation where utility is unwilling to interconnect with another utility and the unwilling utility has no obligation to sell power to the other utility. In the case of cogenerators, Section 210 of PURPA has clearly mandated that a utility is required to offer to interconnect to buy the power as long as the safety and reliability of the system is ensured. The conflicts in these two laws were recognized by the Appeals Court, and the Court suggested two ways of relieving cogenerators of substantial administrative burdens imposed by Section 210 and 212 of the FPA. The Commission could avoid imposing substantial administrative burdens on the cogenerators by adopting streamlined procedures, or, if necessary, by having Congress amend "a Congressional product that may have been less than fully considered."

Section 210 of PURPA intended to relieve cogenerators and small power producers from as much of the burden of government regulations as was feasible and consistent with the public interest. The public interest cannot be served until an appropriate mandatory

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interconnection amendment is enacted. The FERC and the state commissions can ensure protection of the system's safety and reliability.

UTILITY OWNERSHIP

In the testimony presented by API to this Subcommittee on April 19, the paper industry emphasized that it does not support 100% ownership by electric utilities of cogeneration and small power production facilities. Utilities already can engage in cogeneration activities in their regulated environment with a guaranteed fair rate of return. There has been a history of utilities discouraging potential cogenerators with high rates for back-up and supplemental power, expensive interconnections and safety requirements. The existing 50% utility ownership limitation was purposefully established to prevent utilities from frustrating the attempts of industry to generate power and to expand cogeneration and small power production.

The paper industry is concerned that 100% ownership of cogeneration facilities by utilities would encourage utility management to divert its focus away from its basic job of generating and delivering electric power at the lowest possible cost to its customers. Delays would also result from the incentive for utilities to hold out for ownership rather than getting on with the business of simply purchasing more efficiently generated power from the cogenerators, as is required by PURPA.

Industries such as the paper industry, in contrast to utilities which are regulated, have no returns protected by rate regulation, and are completely at risk in their cogeneration ventures. The industries perceive that the risks will be considerably greater if utilities are permitted to use their monopoly as leverage in competing with them in an unregulated environment. In addition, the paper industry questions whether permitting or encouraging unregulated power generation by electric utilities would benefit the public. I suggest

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that you refer back to the testimony presented by William J. Nicholson of Potlatch Corporation at your Subcommittee's April 19 hearing for a more detailed explanation of these points.

There is no assurance of fair competition if utilities are simply allowed to own 100% of qualifying cogeneration facilities, as is proposed in the amendment to S. 1885. The paper industry considers that there are some more favorable approaches to utility ownership, such as the proposal of the National Association of Regulatory Utility Commissioners suggested at your April 19 hearing.

Additional protection would be required, however. The following examples are possible ways to supply this protection: a utility's purchase of cogenerated power from its wholly owned subsidiaries could be limited to a percent of the total amount of qualified facility capacity for which the utility has signed contracts; and the utility could be required to pay its wholly owned subsidiaries a price equal to the weighted average cost of all prices paid by the utility to qualifying facilities with whom the utility has not taken a final position on these suggestions.

I appreciate this opportunity to present the views of the paper industry on the important amendments before this Subcommittee, and I will gladly endeavor to answer any questions you have, or to call on my colleagues here if necessary.

Senator HUMPHREY. Thank you Mr. Slinn. Mr. Thompson.

STATEMENT OF ALLAN J. THOMPSON, COUNSEL, CALIFORNIA INDEPENDENT ENERGY PRODUCERS

Mr. THOMPSON. Thank you, Senator. Good morning. I will keep my remarks quite brief not only in the interest of saving time, but I've developed a terrific cold over the weekend.

We appreciate the opportunity to appear here. My name is Allan Thompson. I'm an attorney with the San Francisco law firm of Petty, Andrews, Tufts and Jackson, representing the California Independent Energy Producers. With me today is Mr. John Dennis who is with the Acurex Solar Corp., the chairman of the board of directors; and Dr. Jan Hamrin who is our executive director.

I believe that the intent of PURPA was clearly and succinctly stated and outlined in the Congressional Record that I read in a statement by you. I believe that the goals of PURPA were laudable ones and I think overall, we must notice the success we've had in a short amount of time since PURPA was enacted in 1978.

What your amendment to your Senate bill will do is to reinstate some of the stability in that structure and allow the industry again to go forward.

Senator HUMPHREY. I agree.

Mr. THOMPSON. Let me briefly touch on our position with regard to the issues, and then give one or two examples of the type of technology that is just now emerging, due in large part to PURPA.

As far as the full avoided cost issue is concerned, I believe that now the industry is just beginning to achieve two of the goals of PURPA, one of which was to bring venture or risk capital into the market. These sources of funds are not usually available to utilities and I think that we are now seeing the financial community come into a position where they have a greater trust in the technologies and are more willing to invest invested funds.

The second and not the least important is that we are finding that the Nation's technological muscle is coming to bear in the new technologies. Large scale wind, large scale solar geothermal development, and a refining, I think, of some of the older technologies that we have seen, the hydro and cogeneration.

We believe that the D.C. Circuit Appeals case of American Electric Power decision has indeed put a cloud over the industry, and I applaud your efforts to take away that cloud.

As far as the issue of whether or not the States are properly in a position to make a determination as to whether or not avoided costs should be something below 100 percent, I think we in California would feel very good about having our State public utilities commission make that kind of decision. Not only because California, I hesitate to say is unique, well unique in at least one way.

Senator HUMPHREY. I can think of several.

Mr. THOMPSON. I suspect most people in this room can, Senator. We do have large scale geothermal, solar, and wind feedstocks, if you will, and our utilities have been very heavily dependent on oil and natural gas fire generation. That plus the poor air quality and some of our air basins, I think, gives the State public utilities commission the impetus to readily encourage development of small power cogeneration facilities.

As far as the interconnection issue, we very briefly view the attempt of the amendments to rectify what we see as a technical problem and would applaud the efforts.

We frankly have not had the problem with interconnect in California that apparently other parts of the country have had. I don't feel that I should really address that as much as the other issues.

Let me briefly describe one or two of the technological advances that we've seen in California. I will not touch on cogeneration and hydro because other members of the panel have more than adequately addressed those.

First, when we talk about wind energy, wind areas, areas of the United States most suitable for development are New England, as you are well aware, the Pacific Coast, and some of the Mountain States, Montana and Idaho.

The California Energy Commission has estimated that in excess of 13,000 megawatts of wind energy can be developed in California. That's the equivalent of 13 nuclear units, if you will. Project sponsors of wind parks or wind farms range from large corporations to individuals. Projects range from those that utilize very large wind machines, 500 or 600 feet high, to the much smaller machines and the size of the individual units range from a half a megawatt up to, they're looking at projecting 6 and 7 megawatts in a unit.

The technology in the wind area is just now to the point where we are seeing second generation development of machines and I believe that the amendment to the Senate bill under consideration here today would speed along that technological development because it would take some of the cloud off the industry.

One other example that I would like to give you, and this is a very specific example. There is a corporation in northern California called Geoproducts. They are in the process of final design of a plan to northern California in a town called Susanville, utilizing feedstock. The unique thing about it is that they are also utilizing geothermal liquid. Pumping it out of the ground, it has a temperature of about 250° Fahrenheit which is too low a temperature to be used directly in the production of electricity. But what the plan is going to do is utilize the geothermal to preheat the timber products, thereby dehydrating them and making the work products much more efficient. That is scheduled at 55 megawatts, which is a healthy sized plant.

I believe that concludes my remarks, Senator. Overall we applaud your efforts and would offer the services of our association. Thank you.

[The prepared statement of Mr. Thompson follows:]

STATEMENT OF
ALLAN J. THOMPSON

COUNSEL FOR
CALIFORNIA INDEPENDENT ENERGY PRODUCERS

BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

May 24, 1982

My name is Allan J. Thompson and I am an attorney with the San Francisco law firm of Petty, Andrews, Tufts & Jackson. I am appearing here as counsel for the California Independent Energy Producers. Accompanying me today are Mr. John Dennis, of ACUREX SOLAR CORP., the Chairman of our Board of Directors, and Ms. Jan Hamrin, our Executive Director. The Association wishes to
thank this Committee for giving us the opportunity to address issues which are of vital importance to our industry.

The California Independent Energy Producers is a non-profit California business association formed for the purpose of assisting the development of the cogeneration and small power production industry. The Association is very young, being incorporated only this year, and is relatively small, comprising about twenty members. Our members range from large corporations to small closely held companies. The members of the Association represent technologies which cover all the major alternate energy production techniques; i.e. wind, solar, geothermal, hydroelectric and cogeneration facilities. The current members of the Association represent alternate energy potential capacity for the California market in excess of 750 megawatts. The successful completion of projects represented by the Association will result in a substantial decrease in the amount of fuel oil consumed within the state.

The Public Utility Regulatory Policies Act passed by this body in 1978, established a structure which encouraged new technological power production resources. That structure is just now beginning to have significant impact upon the market. We encourage the Senate to enact this Amendment which would continue to foster the intent of PURPA, and support development of the small power production and cogeneration markets.

California utilities have been heavily dependent upon imported fuel oil for the production of electric energy. The state is also blessed with an abundance of the feedstocks ideally suited to the development of alternate energy. For these reasons, the State of California, through its legislative and regulatory bodies, has aggressively pursued the opportunity given it by Congress to encourage the production of cogeneration and small power production facilities.

The State of California has the potential to produce in excess of 20,000 megawatts of alternate energy capacity by the year 2000. As of this date, only a small fraction of that potential has been brought to fruition through contracts with utilities. This may seem like relatively slow progress, but this industry only became commercially viable in 1978 and much of it utilizes technology which is only now becoming available. Thus, progress is indeed rapid when compared to the time it takes for utilities to plan and build traditional generation plants.

One of the major problems facing the cogeneration and small power production industry is uncertainty. Regulatory uncertainty adversely affects every aspect of project development from initial feasibility projections through detailed planning to sources of financing. Much of the uncertainty in the regulatory framework has resulted from the D. C. Circuit Court of Appeals decision in the American Electric Power Service Corporation proceeding. We appreciate the efforts of Senator Humphrey, and this Committee, in attempting to alleviate this uncertainty, and we would urge that this Committee, and the Senate of the United States, pass this Amendment to S.1885.

FULL AVOIDED COST

If the economics of any given project are uncertain, because of marginal cash flows, the necessary financial backing will not be forthcoming. This is particularly true with small power production facilities where, in general, the early year cash flow stream is very important to the financial viability of the project. For this reason this Committee should give preference to the adoption of a scenario which contemplates full avoided costs.

One of the features of the proposed Amendment that we find most attractive is that it allows the individual states to set an avoided cost rate which differs from the 100% of full avoided cost if the states believe such a lower rate can be justified. We believe that this provision will enable each state to assess its own peculiar circumstances and do a cost-to-benefit analysis which compares the savings to ratepayers by a reduction in avoided cost with the reduction in alternate energy resources that could be expected to be developed. We believe that this analysis properly lies with the states.

We believe that payment by the utilities of full avoided cost is necessary to the full development of the industry in California. With our utilities heavily dependent on fossil fuels there are many issues to be considered. Fossil fuels not only degrade the quality of the air, and make California consumers dependent, in part, upon foreign supplies, but also have created a fear within all parts of the community that energy prices will continue to escalate at an unacceptably high rate. This Amendment offers California and the California consumers a method by which they can set an avoided cost at 100%, encourage large scale development of cogeneration and small power production facilities, and eventually ameliorate the problems that naturally come from the combustion of fossil fuels, such as air pollution.

Even if individual states set energy prices at 100% of full avoided cost, there are still a great many benefits to those utility ratepayers. For instance:

> The utilities within the state would find themselves in a much healthier financial position due to the lower capital requirements imposed upon them. One of the benefits of the development of small power production and cogeneration facilities is that the utilities themselves do not have to go to the bond market or sell stock in order to finance construction. The capital for these projects comes from those risk capital markets, a source traditionally not available to utilities. The result of these lower capital requirements is that the utilities become less in need in rate relief in order to improve their financial condition.
>
> Setting the avoided cost at 100% will result in a larger number of cogeneration and small power production facilities coming on line. Eventually there will be a sufficient amount of alternate energy capacity on any given system so that the marginal fuel may cease to be strictly oil or natural gas. At that time, the ratepayers will greatly benefit because the avoided cost (as well as the overall cost to ratepayers) will be less.

> With increased electric production from small power facilities and cogeneration sources, there will be less combustion of fossil fuels, resulting in improved air quality.

INTERCONNECTION

We are very pleased that this Committee is considering a clarification of the interconnection provisions of PURPA. We believe that the ruling of the D. C. Circuit Court of Appeals does not fully reflect the intent of Congress on this issue. However, if this is not corrected and producers are forced to go through a FERC approval process, the industry may suffer a major setback. The reason for this is twofold:

> Some alternate energy producers will become sufficiently discouraged with the length of the approval process that they will abandon projects which otherwise would be feasible.

> Project sponsors who wish to go forward may find themselves without sufficient financial backing because the financial community will be unwilling or unable to await the resolution of an interconnect proceeding.

SUMMARY

The California Independent Energy Producer Association wishes to commend the Senate for its continuing attention to the cogeneration and small power production industry and are very greatful, in particular, to this Committee's work in furtherin the development of alternate energy. The Amendment to S.1885 under consideration today is very helpful to the industry and we support its passage. We thank the Committee for this opportunity to appear and make our views known.

Senator HUMPHREY. Thank you.

You all agree, I guess it's fair to say, that there are important national benefits accruing from cogeneration and small power production. In fact, Mr. Slinn you state so exclusively in your testimony. Yet you all fear increased utility ownership and prefer not to leave that issue to State utility commissions. Why is that?

Mr. SLINN. We think it's interesting, Mr. Chairman, that given the existing provisions that no State PUC has sought that authority. It would appear that the present law is satisfactory and doesn't need to be modified.

Senator HUMPHREY. Well the problem is that the present law is precluding a significant participation of a segment of the industry that has better access to financing. So if we agree that cogeneration, small facilities of that kind are important to the Nation, then a matter of ownership seems to be secondary it would seem to me.

Does anybody want to reply to that?

Mr. ZIMMER. I think the ownership issue goes initially to the heart of why PURPA was enacted in 1978, and that was specifically to address the positions of the interested parties associated with the development of these projects that existed pre-1978, in an attempt to equalize those positions as much as possible by statute and ultimately to set to that process a backdrop from which those parties could proceed to develop these projects, whether they be under published tariffs or whether they be in the form of negotiations. And the ownership question I think in the minds of a lot of people goes to the very heart of that consideration.

Would the shift in that position adopted by Congress create a new situation vis a vis that desirable goal that you had in 1978? The NARUC amendment offers the prospect in our judgment of perhaps compromising on that issue with appropriate oversight and protection under its two part test that the States would be free to relax the type of restriction where there is No. 1 the prospect for enhanced or increased development of cogeneration development and secondly the likelihood that there would not be anticompetitive results associated.

Senator HUMPHREY. Dr. Marker, you state the need for smaller producers to be allowed to appeal to a State regulatory body with regard to avoided cost determination to FERC. If we let States appeal to FERC that kind of defeats giving the authority to the States in the first place, doesn't it? I mean if you allow an appeal of a State decision to FERC?

Dr. MARKER. I think the problem among our members is beginning to emerge in the Northwest and perhaps I might use that as an example. You have situations where avoided cost is defined by fuel use in the States of Washington and Oregon is low because of the very high hydro dependency in the main. You also have an overriding market determinant in the Northwest power administration under the Bonneville Power Administration. And the problem there is if you have, if the BPA is your market determinant their rate in the near term and the State utility commissions both have rates less than BPA, what is the remedy if indeed the small power producer can make an argument that under various low growth scenarios the rate is going to be likely different than that 2 or 3 years down the road and the BPA or the utility commission have ascertained that is the problem.

And I'm not suggesting that there is an answer. I'm suggesting that FERC operates, I think, quite effectively as a mediator in such matters and that ought to be opened to the small power producers or those associations representing them such that they could get some sort of hearing at a larger, higher level.

Senator HUMPHREY. Well then why shouldn't we let the utilities have the same appeal rights?

Dr. MARKER. I don't think we can quarrel with that. In point of fact, the utilities have the ability to forestall decisions, and the fact that we are sitting here today, I think, is a reflection of that capability which the utilities enjoy.

Senator HUMPHREY. Let me ask that same question of Mr. Zimmer.

Mr. ZIMMER. Could you repeat the question?

Senator HUMPHREY. I assume that you advocate letting producers appeal a State decision to FERC. If that is the case, then would you also agree with Mr. Marker that the utilities ought to have the same appeal rights?

Mr. ZIMMER. We didn't specifically recommend such a right of appeal line to the FERC. We were supportive as I review the committee print, of a dispute resolution mechanism that was established therein subject to just technical modifications in terms of the timeliness of that procedure.

I guess I'd also raise the question in terms of an additional review opportunity, how would this reconcile itself with the existing enforcement capabilities that are provided by statute already? Is this something in addition to what is currently provided by statute? Is it something new? It's unclear to me. Our group has not advocated that specific position.

Senator HUMPHREY. Does anybody else want to comment on this aspect?

[No response.]

Senator HUMPHREY. Dr. Marker, your organization is negotiating with several environmental groups to establish a more precise statutory distinction between "new" and "existing" dams under section 201. What is, can you tell us what is going on there?

Dr. MARKER. I've been out of touch for a few days. Progress is sometimes difficult to document because the game changes a bit, but it is my understanding that there is a convergence of interest between environmental groups on the one hand and small power producers, particularly hydro interests on the other. The issue here is, as I understand it, one of what sort of remedies, what sort of protections exist for bonafide environmental interests as relates to the construction of new dams.

We feel that new dams do indeed create environmental changes and that we can accomodate for the most part the interest of these groups as to new dam construction. We think also that the FERC inasmuch as a new dam is typically a major Federal action, that this is subject to very rigorous scrutiny by all of the Federal agencies with the FERC providing in our judgment effective overview.

To the extent that pretty uniformly our members don't get what they want in that hearing speaks, I think, to the efficacy of the process.

On the question of small diversion structures and particular high head sites in the west, I think we have an understanding that a diversion structure does not have the environmental impact of the sort that a new dam does, and I think we're making progress there, generally. It's certainly our hope that the environmental interest, and I used to be regarded myself as an environmentalist, but that the environmentalists will not really in effect come out on the side of large coal and nuclear steam generation.

To the extent that they vigorously oppose the proper redefinition, reaffirmation of PURPA in your bill, I think that could be an outcome and I think that could be a very unhealthy outcome for all of us.

Senator HUMPHREY. Let's go back to the utility ownership proposal. Mr. Zimmer, can you elaborate for us on the difference between the original NARUC proposal and that which is in this bill?

Mr. ZIMMER. The major difference between the NARUC proposal and the proposal contained in this bill, I think can be summarized in a twofold fashion. No. 1, the NARUC proposal provides more detail and guidance for the States on the question of when in fact the 50-percent ownership test limitation would be relaxed, which detailed guidance is not contained in the committee print the way it stands now.

Second, the way I interpret the committee print, I think it is also a function of where the burden of proof is lodged for making that key determination on the ownership issue and whether or not it will be relaxed. I think there is a shift of the burden of proof between the two.

Senator HUMPHREY. In your estimation, what percentage of cogeneration projects presently contemplated would require full avoided cost rates in order to be justified?

Mr. ZIMMER. That question is a very difficult one to answer, Mr. Chairman. I think as I testified last month, these types of projects very much are a function of a case-by-case analysis and determination with respect to the technology applied, the fuels that are being used, the service area that you're looking at, the underlying economics for the project, whether or not the electric utility is generating from oil and gas as opposed to coal and nuclear, et cetera. Whether or not there is a need for reserved capacity, whether or not there is a need for traditional heating capacity, makes the ability to respond to that question very difficult if not impossible.

Mr. SLINN. In that connection if I could volunteer, the information that is in our formal statement on a survey that we took of the members of the American Paper Institute indicated that in the next 5 years with the availability of full avoided cost, our industry could expand its cogeneration capability by some 40 percent. We did not ask the other half of that question.

Senator HUMPHREY. Mr. Zimmer, you made clear how difficult it is to answer that question. In that case wouldn't you prefer that because of the local considerations, local considerations are awfully important, wouldn't it be better to have the authority to make that decision in the hands of the State commission?

Mr. Zimmer. On the question of determination of full avoided cost?

Senator Humphrey. Yes.

Mr. Zimmer. Specifically, that interpretation has been made in the form of guidance or an overview shall we say, by the FERC which in turn is implemented as a matter of course at the local, State level. What the statute is attempting to accomplish, the way I interpret the committee print is nothing new or nothing different as opposed to just reinstating the stability provided by the FERC rulemaking process and the end result of that deliberation prior to the enactment of AEP.

Senator Humphrey. What about a national fuel use criteria for cogeneration facitities?

Mr. Milne. We believe all cogeneration facilities are fossil fuel, coal, oil, or gas. And all cogeneration facilities, I think it's fair to say, use fuel at an efficiency of somewhere between 60 and 80 percent depending on the application. That's the essence of cogeneration. And typically delivered energy, the electric utility route, is in the 25 to 35 percent. I think that is also well documented.

So it's quite clear that the benefit is at least 2 to 1 and in some cases 3 to 1 in the use of fossil fuels by the cogenerator as opposed to providing the same amount of electrical energy via the traditional public utility system. So that even use of imported oil is enhanced by that efficiency quotient, namely 2 or 3 to 1, and therefore decreases the amount of oil required by that number. It is not fair to say that the cogenerator who uses oil is backing out coal generated electricity because in most cases the cogenerator who uses oil is probably in an area where the electric company is also using oil.

Second, if the electric company has a choice, it would, I assume, back off its most expensive form of energy, if they had a choice, and therefore that would be oil, or most likely would be oil, so the oil would be reduced by 2 to 1. So I think there should be no overall restriction on the type of fossil fuel used. Certainly domestically produced fuels would have an advantage, such as natural gas or coal.

Mr. Zimmer. Might I add one or two other points on that?

Briefly, the consideration of fuel use restrictions also runs into the situation posed by current congressional reexamination of the Fuel Use Act in general which has currently been before this subcommittee at hearings a year ago. Coupled also with the fact that there was congressional consideration regarding the size to which these types of prohibitions would apply under the Fuel Use Act with the specific recognition that we would not apply such prohibitions to facilities below 100 million Btu's per hour or in the alternative aggregated at 250 million Btu's per hour. Enactment of a fuel use tempered restriction for current generation facilities arguably would be inconsistent with that congressional decision in 1978.

Senator Humphrey. Mr. Slinn, you expressed concern that State commissions might retroactively lower purchase rates. Why do you feel that the language in the bill in section 3 dealing with prospective application, why do you feel that is ineffective or insufficient?

Mr. Slinn. Could I call on counsel to respond to that?

Mr. **Boykin**. Senator, the problem is we are addressing something that is not addressed in your amendment. It is the situation where suppose I go ahead with your amendment and the State sends a rate and you sign up for that rate. You also have that problem now of the State later changing that rate and there is nothing in your amendment or in anything to deal with that problem. And this is something in negotiations with utilities we hear time and time again. What are we going to do if the State does not allow us to pass through that cost 5 years down the road or 10 years down the road? It's a very difficult problem in contract negotiations.

Senator **Humphrey**. Thank you very much for your help.

The next witness is Ms. Susan Shanaman, chairman, Pennsylvania Public Utility Commission.

Good morning, Ms. Shanaman.

Ms. **Shanaman**. Good morning.

Senator **Humphrey**. Could you keep your statement to 5 or 7 minutes? And then we'll put the whole statement in the record.

STATEMENT OF SUSAN M. SHANAMAN, CHAIRMAN, PENNSYLVANIA PUBLIC UTILITY COMMISSION

Ms. **Shanaman**. Thank you. My name is Susan Shanaman. I'm chairman of the Pennsylvania Public Utility Commission. I am testifying here today on behalf of the National Association of Regulatory Utility Commissioners.

The members of NARUC appreciate this opportunity to address the amended version of S. 1885. We commend you, Mr. Chairman, for taking the initiative to amend the bill as it was originally introduced and in so doing to alter substantially the legislation's thrust.

We believe that as compared to the original bill the substitute version of S. 1885 provides a markedly more constructive approach to the issue of what extent the electric utilities investments and cogeneration and small power production facilities should share in the benefits made available under section 210 of PURPA. Moreover, the additional sections of the substitute bill would result in a positive manner the aura of uncertainty created by the recent U.S. Court of Appeals decision in the *American Electric Power* case.

I am pleased to express our association's full support for this package of amendments and the belief that their enactment will restore certainty to the Federal scheme, facilitating development of these alternative power sources, while lodging with the States the authority to tailor their implementation of section 210 to individual State circumstances.

In elaborating our position and support of the substitute I would like to highlight several of the provisions affecting State regulation which we suggest needs some clarification by way of further amendment or committee report language.

NARUC deeply appreciates your amendment that would leave to State utility regulators the decision to what extent electric utilities may participate in unregulated qualifying facility power productions. As I suggested in my testimony on the original bill last month, State regulators clearly are in the best position to determine what limits on such participation, if any, are appropriate to encourage development of cogeneration and small power production without resulting in undue anticompetitive effects.

As currently drafted, section 1 of the substitute bill would remove the statutory utility ownership limitation applicable to cogeneration facilities. If this provision is enacted, FERC would presumably institute a rulemaking proceeding to revise its regulations so as to remain silent on the question of utility investment and cogeneration facilities that qualify for section 210 treatment.

We would also anticipate that some type of restriction on utility participation and small power QF's would remain in the FERC regulations governing this issue. Given these expectations, we suggest that section 1's provisions concerning State authority with respect to establishing ownership limitations in both categories be amended to clarify that the States are free to establish such limitations where none exist, by way of Federal statute, and establish ownership limitations that vary from those prescribed in the FERC regulations under PURPA.

If this legislation was approved, section 210 itself would specify that the QF purchase rates must be equal to the utilities avoided costs, thus maintaining the Federal policy of encouraging cogeneration and small power production by providing a significant financial incentive to produce and market power from these sources, at the same time that it would insure that States are permitted to balance the varied interest of utility rate payers within their respective borders against the goal of encouraging alternative power production and establishing QF purchase rates. This provision is entirely consistent with the traditional role of State public utility commissions and NARUC commends you for proposing such a revision that resolves a critical question under section 210 in a manner which gives continued confidence in the State's exercise of this role.

In order to further clarify State regulatory authority in this connection we respectfully suggest that the legislative history concerning the bill include language which expands upon the meaning of different rates for QF purchases, specifically we suggest that the committee report note that States are free to set rates that are higher or lower than avoided cost based on authority referred by section 210 and relevant State laws or regulations.

In addition we believe that the legislative history should stay as States may choose to classify QF's for the purpose of establishing different nondiscriminatory rates for utility purchase of their power based on the QF size, energy source or length of time in operation.

Although such authority would be granted implicitly by section 3 of the legislation if approved, explicit recognition of that option in the committee's report would help to put potential challenges to a States' exercise of its discretion to distinguish between subclasses of QF's consistent with the interest of these power producers and those of the utility rate payers.

NARUC strongly supports the provision of section 4 that gives the States authority to prescribe the terms governing mandatory interconnection arrangements between QF's and electric utilities where the parties have not reached their own agreement concerning such terms.

This particular provision is well drafted in that it will allow a State to decline to exercise this authority if it would rather defer to the FERC on the matter. Its enactment would add flexibility to State consideration of interconnection arrangements, without compromising the Federal goal of facilitating a streamlined process in this regard.

As for deletion of the statutory procedure requirements, applicable to mandatory interconnection orders, the NARUC also supports this revision to PURPA. In the interest of keeping to a minimum the regulatory burdens entailed in obtaining such orders, we would notice while that under section 4 of this legislation a State would be free to require a full evidentiary hearing in prescribing the terms governing a disputed interconnection if it deemed such a procedure necessary.

In sum, the members of our association consider the proposed amendment in the nature of a substitute for S. 1885 to represent a carefully crafted effort to insure that the original intent of Congress in enacting PURPA's cogeneration provisions is carried out at both State and Federal levels. Approval of this legislation, together with the clarifications I have just described would lay a sounder foundation for a program that provides for increased conservation of electric energy, increased efficiency in electric utilities' use of facilities and resources and equitable rates for electric utility consumers.

Thank you for your attention.

[The prepared statement of Ms. Shanaman follows:]

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON ENERGY REGULATION

STATEMENT OF THE

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

1102 INTERSTATE COMMERCE COMMISSION BUILDING
CONSTITUTION AVENUE AND TWELFTH STREET, N.W.
POST OFFICE BOX 684, WASHINGTON, D.C. 20044
TELEPHONE No. (202) 628-7324

ON

S. 1885, A BILL TO AMEND THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978

MAY 24, 1982

1889

Good morning, Mr. Chairman and Members of the Subcommittee:

My name is Susan M. Shanaman. I am Chairman of the Pennsylvania Public Utility Commission, and I have been a member of the Commission since November 1979. I am testifying today on behalf of the National Association of Regulatory Utility Commissioners, commonly known as "the NARUC". Accompanying me today are Rita A. Barmann, NARUC Director of Congressional Relations, and Donna S. Bolinger, NARUC Assistant Director of Congressional Relations.

The NARUC is a quasi-governmental, non-profit organization founded in 1889. Within our membership are the governmental agencies of the fifty States, the District of Columbia, Puerto Rico and the Virgin Islands which are engaged in the regulation of utilities and carriers. Our chief objective is to serve the consumer interest by seeking to improve the quality and effectiveness of government regulation in America.

The members of the NARUC appreciate this opportunity to address an amended version of S. 1885, a bill proposing revisions to the Federal Power Act and to the Public Utility Regulatory Policies Act of 1978 (PURPA) to further encourage development and use of cogeneration and small power production facilities. We commend you, Mr. Chairman, for taking the initiative to amend S. 1885 as it was originally introduced and in so doing, to alter and broaden substantially the legislation's thrust.

We believe that, as compared to the original bill, the substitute version of S. 1885 embodies a markedly more constructive approach to the issue as to what extent electric utilities' investments in cogeneration and small power production facilities should share in the benefits made available under Section 210 of

PURPA. Moreover, the additional sections of the substitute bill would resolve in a positive manner the aura of uncertainty created by the recent U.S. Court of Appeals decision in the American Electric Power (AEP) case which vacated two portions of the regulations adopted by the Federal Energy Regulatory Commission (FERC) to implement Section 210; namely, those pertaining to avoided cost purchase rates and to interconnection between utilities and qualifying cogenerators and small power producers.[1]

I am pleased to express our Association's full support for this package of amendments, in the belief that their enactment would restore certainty to the Federal scheme for facilitating development of these alternative power sources, while lodging with the States the authority to tailor their implementation of Section 210 to individual State circumstances. In elaborating our position in support of the substitute, I will also highlight several of its provisions affecting State regulation which we suggest need some clarification by way of further amendment or committee report language.

Overview of S. 1885 as Amended

As originally introduced, S. 1885 was designed to remove statutory limitations on utility ownership of cogeneration and small power production facilities which qualify for favorable treatment under PURPA's Section 210. Congress enacted these Section 210 benefits for such qualified facilities, or "QFs", in order to ease the environment within which cogenerators and small power producers operate. They are: (1) exemption from Federal and State utility rate and financial regulation; (2) mandatory purchase by electric utilities of QF-produced power, and required utility sale of power to QFs; and (3) a requirement that power bought and sold by such facilities be compensated for at "just and reasonable rates" that do not discriminate against QF power producers.

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[1] See American Electric Power Service Corporation, et al., v. FERC, No. 80-1789, slip op. (D.C. Cir., January 22, 1982; rehearing denied, April 9, 1982).

S. 1885 would have repealed language in the Federal Power Act as amended by PURPA as well as provisions in PURPA's Section 210 which specify that QFs may not be owned by parties which are "primarily engaged in the production or sale of electric energy". This has been interpreted in FERC regulations to mean that QFs may not be more than 50 percent owned by utility companies. If enacted, the original S. 1885 would have allowed an electric utility to establish a wholly-owned, unregulated subsidiary which could sell to its parent company its QF-produced power at rates based on the utility's avoided costs.

Rather than completely removing this utility ownership limitation with respect to QFs, Section 1 of S. 1885 as amended would repeal it only as to cogeneration facilities. However, it would authorize State regulatory authorities to establish restrictions on utility participation in both categories of QFs under PURPA, i.e., cogeneration or small power facilities.

The substitute version of S. 1885 goes on to address the uncertainties left in the wake of the appeals court decision in the AEP case. Section 3 would clarify guidelines for purchase rates applicable to QF power sales to utilities. It would require that such rates "shall be the incremental cost of alternative energy" of the purchasing utility. In addition, it would grant to States the right to establish a different QF purchase rate, as long as such rate encourages cogeneration and small power production and is consistent with the public interest and the interests of utility ratepayers.

Section 4 would amend PURPA's Section 210 to clarify that FERC regulations may require electric utilities to interconnect with QFs for the purpose of making the contemplated power purchases and sales. It would also codify several of the current FERC regulations regarding arrangements for interconnection and would empower State authorities who choose to do so to prescribe the terms of interconnection where the parties cannot agree on those terms. Finally, it would remove the statutory stipulation that certain procedural requirements be satisfied prior to issuance of a mandatory interconnection order.

In the remainder of my testimony, I will outline the NARUC's views regarding the merits of the amended legislation and, where appropriate, identify areas which we believe warrant further clarification.

Utility Ownership Limitation

The NARUC deeply appreciates, Mr. Chairman, your amendment to S. 1885 that would leave to State utility regulators the decision as to what extent electric utilities may participate in unregulated QF power productions. As I suggested in my testimony on the original bill last month, State regulators clearly are in the best position to determine what limits on such participation, if any, are appropriate to encourage development of cogeneration and small power production without resulting in undue anti-competitive effects.

As currently drafted, Section 1 of the substitute bill would remove the statutory utility ownership limitation applicable to cogeneration facilities. If this provision is enacted, FERC would presumably institute a rulemaking proceeding to revise its regulations so as to remain silent on the question of utility investment in cogeneration facilities that qualify for Section 210 treatment. We would also anticipate that some type of restriction on utility participation in small power QFs would remain in the FERC regulations governing this issue. Given these expectations, we suggest that Section 1's provision concerning State authority with respect to establishing ownership limitations in both categories be amended to clarify that the States are free to: (1) establish such limitations where none exist by way of Federal statute (i.e., for cogeneration facilities); and (2) establish ownership limitations that vary from those prescribed in FERC regulations under PURPA.[2]

Avoided Cost Purchase Rates

Section 3 of the amended S. 1885 would add language to PURPA that constitutes an ideal response to the D.C. Circuit's decision in the AEP case regarding QF purchase rates. The essense of the appeals court's ruling was that the FERC regulations which established a utility's full avoided cost as the floor for purchase rates paid to QFs inappropriately denied to States the right to order that the benefits of the QF-utility transaction be shared with other customers of the utility.

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[2] This amendment to the substitute version of S. 1885 may be made by revising the new PURPA subsection (k) contained in Section 1(b) to read as follows:

> "(k) Nothing in this Act or in rules prescribed by the Commission pursuant to this section shall preclude a State agency from exercising authority to establish any limitations which it deems appropriate respecting ownership by persons primarily engaged in the generation or sale of electric power (other than electric power solely from cogeneration facilities or small production facilities) for qualifying cogeneration or small power production facilities.".

If this legislation is approved, Section 210 itself would specify that QF purchase rates must be equal to the utility's avoided costs, thus maintaining the Federal policy of encouraging cogeneration and small power production by providing a significant financial incentive to produce and market power from these sources. At the same time, it would ensure that States are permitted to balance the varied interests of utility ratepayers within their respective borders against the goal of encouraging alternative power production in establishing QF purchase rates. This provision is entirely consistent with the traditional role of State public utility commissions, and the NARUC commends you, Mr. Chairman, for proposing a PURPA revision that resolves a critical question under Section 210 in a manner which evinces continued confidence in the States' exercise of this role.

In order to further clarify State regulatory authority in this connection, we respectfully suggest that the legislative history concerning S. 1885 include language which expands upon the meaning of "different rate[s]" for QF purchases. Specifically, we suggest that the committee report note that States are free to set rates that are higher or lower than avoided cost, based on authority conferred by Section 210 and/or relevant State laws or regulations.

In addition, we believe that the legislative history should state that States may choose to classify QFs for the purpose of establishing differing, nondiscriminatory rates for utility purchase of their power, based on the QF's size, energy source, or length of time in operation. Although such authority would be granted implicitly by Section 3 of the legislation if approved, explicit recognition of that option in the committee's report would help to preclude potential legal challenges to a State's exercise of its discretion to distinguish between subclasses of QFs consistent with the interests of these power producers and those of the utility ratepayers.

Mandatory Interconnection

The NARUC strongly supports the provision in Section 4 of the substitute version of S. 1885 that gives the States authority to prescribe the terms governing mandatory interconnection arrangements between QFs and electric utilities, where the parties have not reached their own agreement concerning such terms. This provision is particularly well-drafted in that it would allow a State to decline to exercise this authority if it would rather defer to FERC on the matter. Its enactment would add flexibility to State consideration of interconnection arrangements without compromising the Federal goal of facilitating a streamlined process in this regard.

As for deletion of the statutory procedural requirements applicable to mandatory interconnection orders, the NARUC also supports this revision to PURPA in the interest of keeping to a minimum the regulatory burdens entailed in obtaining such orders. We would note as well that under Section 4 of this legislation, a State would be free to require a full evidentiary hearing in prescribing the terms governing a disputed interconnection, if it deems such a procedure necessary.

Conclusion

In sum, the members of our Association consider the proposed amendment in the nature of a substitute for S. 1885 to represent a carefully crafted effort to ensure that the original intent of Congress in enacting PURPA's cogeneration provisions is carried out at both the State and Federal levels. Approval of this legislation, together with the clarifications I have just described, would lay a sounder foundation for a program that provides for increased conservation of electric energy, increased efficiency in electric utilities' use of facilities and resources, and equitable rates for electric utility consumers.

Thank you for your attention.

SUMMARY OF TESTIMONY

- The NARUC supports the substitute version of S. 1885 proposed by one of the bill's original sponsors, in the belief that the substitute's enactment would restore certainty to the Federal scheme for facilitating development of cogeneration and small power production facilities provided for in Section 210 of the Public Utility Regulatory Policies Act of 1978 (PURPA), while lodging with the States the authority to tailor their implementation of Section 210 to individual State circumstances.

- The substitute embodies a markedly more constructive approach to the issue of whether electric utilities' investments in cogeneration and small power production facilities should share in the benefits made available under PURPA's Section 210. It would leave this determination to State utility regulators, who are clearly in the best position to determine whether such investments may result in undue anti-competitive effects.

- Section 1 of the substitute should be amended to clarify that the States would have authority to establish utility ownership limitations on qualified facilities where none exist by way of Federal statute and to establish limitations that vary from those prescribed under FERC regulations.

- Section 3's treatment of avoided cost purchase rates should be elaborated in the legislative history of S. 1885 to clarify that States would be free to set rates that are higher or lower than the utility's avoided cost, and to classify qualified facilities for the purpose of establishing differing, nondiscriminatory rates for utility purchases of QF power.

- The NARUC strongly supports the provision in the substitute bill's Section 4 which would permit the States to prescribe the terms governing mandatory interconnection arrangements between QFs and utilities, where the parties are unable to arrive at such terms themselves.

Senator **Humphrey**. Thank you.

One of the earlier witnesses, I don't know if you were here at the time, expressed a concern that setting a particular rate, avoided cost rate would constitute a presumptive standard. They weren't exactly the words. Were you here during the first panel?

Ms. **Shanaman**. Yes, I was.

Senator **Humphrey**. On behalf of the association, what is your response to that? Would State utility commissions regard something as a presumptive standard?

Ms. **Shanaman**. I think the fact that it is stated in the legislation certainly would give some presumptive effect to it but the fact that it is then followed by that option or by that exception to allow the States to set a different rate, I think would permit us the flexibility desireable to consider all the circumstances involved so that we can set a rate that is fair.

Senator **Humphrey**. So you would not feel, or your organization members would not feel restrained significantly by such a standard in the statute?

Ms. **Shanaman**. There would be some constraints, I'm sure, and I would suspect that many would feel that to go to a rate other than what is a statutory set rate would require a certain amount of evidence and a record to justify going to a different rate.

Senator **Humphrey**. Of course. But that's not a terrible burden is it?

Ms. **Shanaman**. I don't think so. It's something we do all the time.

Senator **Humphrey**. Isn't that something the commission is supposed to consider?

Ms. **Shanaman**. Right.

Senator **Humphrey**. Then in general, your organization members feel competent to assume additional responsibilities in implementing PURPA which this bill would give them?

Ms. **Shanaman**. Yes. I think it's consistent with the types of things that we have to do every day in our business as State regulators.

Senator **Humphrey**. Can you think of any situations where the interconnection provisions proposed would be inadequate to protect the safety and the reliability of the utilities' distribution system?

Ms. **Shanaman**. No I cannot.

Senator **Humphrey**. You're satisfied with these provisions?

Ms. **Shanaman**. Yes, Senator.

Senator **Humphrey**. Going back to the avoided cost standard again, what effect, for instance, would a 90-percent avoided cost standard have on existing State rules under section 210?

Ms. **Shanaman**. Well I believe to the extent that the existing State rules reflect the current law, and the FERC regulation of avoided cost, it would obviously have an effect on requiring us to go back and redo all of those standards that have been previously set.

Senator **Humphrey**. What would be the time factor? How long would it take for all of that to occur?

Ms. **Shanaman**. I would say, it's difficult to say on behalf of every State commission, but you're probably talking anywhere from a minimum of 4 to 6 months and could in fact, depending on the circumstances, take somewhat longer.

Senator HUMPHREY. Thank you.

We might be submitting further questions in writing.

Thank you very much.

Ms. SHANAMAN. Thank you.

Senator HUMPHREY. Our next witness is Dr. Jay Kennedy, representing the Electricity Consumers Resource Council. Dr. Kennedy, good morning, and you will summarize your statement in 5 to 7 minutes? We'll accept your full statement for the record.

STATEMENT OF DR. JAY KENNEDY, ELECTRICITY CONSUMERS RESOURCE COUNCIL

Dr. KENNEDY. Thank you. I appreciate the opportunity to be here to speak on behalf of our 17 industrial members of ELCON. We have previously filed testimony on hearings on S. 1885, but I appreciate the opportunity to speak in person on the amendments.

We're somewhat unique in terms of the witnesses that appeared before you this morning. There's a great deal of concern expressed by consumers, and we certainly are those. In addition to that we are in some cases cogenerators, and so again we appreciate the concern from that point of view.

We appreciate the fact that the amendments here allow an interconnect for our member cogenerators. And indeed I might mention at this time I have been notified by at least one of our members that discussion over qualified cogeneration project has been stopped because of the uncertainty of the outcome of interconnect question. That is, well, we secondly, have some problem with the question of avoided cost.

We obviously as recipients of the avoided cost, we would be fools not to appreciate the fact that some perhaps large number would be heaped upon us for the sale of electricity. On the other hand, the requirement that avoided cost be established as a guideline or a standard at the Federal level does bother us. It has the aspect of deja vu. We objected to the use of standards under the original PURPA and feel obliged to do so here, if for nothing else for the sake of consistency.

More than that, we filed comments with FERC when they were having hearings on the avoided cost question. Our position now is as it was then. We feel that avoided cost should be treated at the maximum level and the parties to the cogeneration arrangement should be free to negotiate something below that.

To take care of the fear that the rate could be established above full avoided cost would certainly prohibit that, setting 100 percent as the maximum limit. I sympathize with your question about what is meant by clear cut full and some other kind of avoided cost. That is exactly the same kind of questions we have with issuing marginal costs, which some of the folks here this morning had no trouble with when they were hearing discussions of that subject. But when it comes to cogeneration and avoided cost they seem to have great difficulty with it. We think it's the same bag of worms and we think there are great differences among various parties over what is avoided cost. Let the parties work it out subject to the approval by the State regulatory agency.

You have the responsibility of protecting all rate payers on that system.

Our third and most serious concern, the one we really wish to address, is the one of the 50-percent cap. We come at this with a somewhat different point of view. We felt that prior to the passage of PURPA that industrial cogenerators were the real disadvantage. The utility industry has no problem with interconnecting with itself and they would have no problem selling to itself, I presume. But we felt that the advantages were of this nature. They were here and we were here. We felt that PURPA intended to even out that inequity by giving us the right of interconnect first of all, and then the ability to sell electricity if an agreement could be reached over the price, and backup rights and so forth. So we felt that was the equivalent. Since the *AEP* decision it would appear that we've slid back to our original position and we now find ourselves confronted with an industry suggesting that they are the disadvantaged which in our terms means that they are seeking a greater advantage.

We are very concerned over the question of the utility industry and the cogeneration business. At the present time and for years past utilities could cogenerate to their hearts' content, but today they can be qualified cogenerators. Admittedly they only share in 50 percent of the benefit of that installation, but nevertheless, they can cogenerate or be 50 percent qualified. In fact we feel very strongly that they have an obligation to cogenerate if indeed that is the least cost option. It is somewhat disturbing to think that perhaps they do not. We think that removal of the ownership limitation would be a factor of deregulation of a portion of the utility's assets. If deregulation is the objective of this exercise, we feel it should be debated directly on its own merits rather than piecemeal.

The unregulated development of cogeneration facilities by electric utilities may harm the utilities' customers in one or more of the following ways. For one thing, beyond the customers, we question what the tax consequences would be if indeed electric utilities are allowed to either designate existing facilities or a new base of facilities as qualified cogenerators. If indeed that is the case, and there are substantial tax advantages accrued to cogenerators, normal cogenerators, but if instead of that baseload units are treated as cogeneration facilities the impact on the Federal budget could be substantial. We have not calculated that number.

We are concerned that the incentive to reduce avoided cost may be reduced. We are concerned that the incentive to install an optimal generation mix may be reduced, while pursuing cogeneration as an objective because of its obvious tax advantages.

The implementation of industrial cogeneration may be precluded by utilities granting preferential treatment to utility owned relative to industrial owned facilities. And there is no question in my mind that there is an issue here, an important one. If there are *x* number of cogeneration opportunities in existence and if utilities are going to create these entities and negotiate with themselves, I assume there will always be a successful negotiation. I cannot believe that our negotiations would turn out as well, since we're dealing with a competitor now, someone who conceivably could absorb this cogeneration opportunity.

Senator, I think that is our most important point in regard to the entire discussion and I'd like to stop at that point.

[The prepared statement of Dr. Kennedy follows:]

May 21, 1982

ELCON

STATEMENT OF THE ELECTRICITY CONSUMERS RESOURCE COUNCIL REGARDING AMENDMENTS TO S. 1885

1. ELCON opposes the removal of the existing PURPA limitation on utility ownership of qualifying facilities (QF's) for the following reasons:

   - Existing law does not prohibit utilities from entering the cogeneration business.

   - In fact, utilities may be 100 percent owners of cogeneration (although not "qualifying") facilities.

   - Utilities have an obligation to install the most efficient facilities and regulators have the responsibility to see that utilities plan and build systems that will meet their customers' needs most efficiently. If cogeneration makes sense, utilities presently should be cogenerating.

   - Removal of the ownership limitation would de facto deregulate a portion of the utility's assets. If deregulation is the objective, it should be debated directly and on its own merits.

   - The unregulated development of cogeneration facilities by electric utilities may harm the utility's customers in one or more of the following ways:

     (a) The incentive to reduce avoided costs may be reduced.

     (b) The incentive to install an optimal generation mix may be reduced.

     (c) Unregulated cogenerators may divert capital and managerial resources from necessary utility functions to unregulated operations.

     (d) The implementation of industrial cogeneration may be precluded by utilities granting preferential treatment to utility-owned (relative to industrial-owned) facilities.

     (e) The effectiveness of state regulatory commissions may be impaired as utilities remove generating facilities from their jurisdiction.

2. PURPA cogeneration benefits and exemptions should apply only to facilities constructed in their entirety after the enactment of this legislation. Such limitation would encourage the construction of new, efficient cogeneration facilities.

3. ELCON objects to the establishment of a Federal "guideline" or "standard" when indeed the responsibility is left to the states. The rates that utilities actually pay for the purchase of electricity from QF's should be determined through an arm's-length negotiation between the utility and the QF. The utility's "avoided" cost should be a ceiling to those rates.

4. ELCON favors the proposed provisions requiring interconnections for QF's. Utilities regain the monopoly advantages that they held prior to PURPA if they have the ability to refuse to interconnect.

5. ELCON believes it premature to enact this legislation. Legislation should not be enacted until all appeals relating to the AEP case have been exhausted and the FERC has reevaluated its rules. After the AEP decision has been resolved, adequate time must be provided for the legislative process to carefully evaluate and assess the proposed legislation.

Senator HUMPHREY. Addressing your concern about baseload facilities being retroactively qualified, I can't imagine any State public utility commission permitting something of that magnitude to slip under the wire.

Dr. KENNEDY. You have a choice in building new units, as being a cogenerating or not a cogenerating facility. It could conceivably qualify even though the ultimate user is not really very beneficial in some terms.

Senator HUMPHREY. You are aware, of course, that the language proposed would permit a State to completely prohibit utility investments in qualifying facilities.

Dr. KENNEDY. Yes, it would seem this is a standard. Rather we would see a choice be established that utilities cannot be qualified cogeneration if they owned over 50 percent and limit it to that for the reasons I've explained.

Senator HUMPHREY. In that case your concern lies with utility commissions. Why have you no confidence that they will do what is right in the public interest?

Dr. KENNEDY. Well, it's not that I so much lack that kind of confidence, but there are 50 of them and they will behave in different ways which is not necessarily bad.

Senator HUMPHREY. That falls under the competition between the States. If one State is poorly managed, as a number are that I can think of but won't mention, the population tends to flow. That's the way things are supposed to work.

Dr. KENNEDY. Well I wouldn't see cogeneration flow back and forth between 100 percent ownership and 50. I wouldn't want to see that.

Our preference is once you've established a rule, well this is done by the Federal Government. Why not stick by our guns and maintain status quo in that regard? And I think that there will still be a flow of people as cogeneration and economic activity takes place in prosperous States. But I don't see the point in allowing this to become an issue of politicing, negotiation. We see nothing to be gained, Senator. We see absolutely nothing from the consumer point of view to be gained.

Senator HUMPHREY. I see lots to be gained. The whole point is that this is a good way to generate electricity, then we ought to do it if it's in the national interest, then let's do it and not quibble about who's doing it. That's my point of view.

Dr. KENNEDY. Well the difference it seems to me is if there are cogeneration opportunities that exist by definition, these involve industrial users. We see no reason why those industrial users can't absorb those opportunities.

The argument over who does it is very important because what you have now under the less than 50 percent cap is the opportunity for a utility to give up its regulated responsibilities to provide power to its customers at the lowest possible cost. Indeed now it seeks to engage in a new business where it can produce electricity, maybe less efficiently than could an industrial cogenerator, than negotiate with itself to sell back electricity at a rate which could be for the disadvantage of the customers. We are buyers also of electricity and we don't see that as being in the national interest.

Senator **Humphrey**. Well that's possible. Woe to the public utility commission and the Governor who appointed the Commissioner if they allow them to take that kind of advantage.

Dr. **Kennedy**. I think the trouble is it only comes out after the fact that you've made a mistake. And as you know, it's too late.

Senator **Humphrey**. Very well.

Thank you Doctor.

Dr. **Kennedy**. Thank you.

Senator **Humphrey**. The next witness is Mr. Peter Brown of the Energy Law Institute. Good morning.

STATEMENT OF PETER W. BROWN, DIRECTOR, ENERGY LAW INSTITUTE

Mr. **Brown**. Good morning. Thank you for inviting me here.

I have provided some testimony which I would like to have put in the record. I think you and I share an advantage Senator, at this moment. I am the last on the agenda and I can think about all the things that people have said before and come up with some wise comments to you about how to solve the apparent problems here.

Second, you are here and watched this whole process take place over approximately 2 hours. We've seen utilities come in and say we want to do this and we want to do that and we've seen the cogenerators come in and say we don't want you to do this or that, and you've got a fight on your hands, and low and behold, two witnesses that preceded me, Chairman Shanaman of the Pennsylvania Commission has come in and said, "Senator, I volunteer to be your referee." I don't think you or the Senate can solve this fight or this problem. I think it's indicative of the competitive market that we see developing in this area.

I think the only thing you can do is set down the fair rules, clear up some of the problems that have occurred as a result of litigation, and where you have this very gracious gesture of the regulatory community and the States, come forward and referree the whole process. I think you ought to take advantage of it while the offer still stands.

From my own standpoint, I favor the proposed bill as it's been proposed as a substitute. I think the idea of setting the rates at full avoided cost subject to State regulatory reduction or increased if the State regulatory commission feels it has the authority, will solve a problem created by AEP on the full avoided cost standard relatively quickly.

Second, it keeps in place at our count approximately 14 commission orders that have been issued for implementation since 1980 when the FERC rules were promulgated. If you went to some percentage of avoided cost I think the State regulatory authority would have to go back, go over what they've done, set the rates and then proceed from there. Right now you have rates that are in effect, based on the full avoided cost standard mandated by the FERC. I think you will find that in some States, everybody is agreeable with what has been done. I don't think utilities will complain, I don't think the ratepayers will complain, I don't think the cogenerators will complain, and those orders will still remain in effect if this bill is passed.

If you change it to some percentage of avoided cost I think you're going to see those have to be changed in order to go down to that percentage of avoided costs.

So I think you settle the problem about AEP with a minimum of administrative effort.

I have a couple of very minor bones to pick on the question of interconnection. I sympathize with the utilities insofar as they say let's make sure that we protect the system when we do interconnection and I would just suggest that you take a look at section 212 of the Federal Power Act, conditions two through four. There I think you have a set of standards that confer considerable discretion on the State regulatory authorities and do make sure that those protections are provided.

I would prefer those standards, by the way, to the standards of 210 of the Federal Power Act.

With respect to the ownership provisions, as you know I have testified before in favor of removing the ownership restrictions on utility participation in this industry. I stand by that testimony today. I think that the provisions that you have proposed in the substitute strike a balance or a compromise between two competing interests.

I think the compromise is a workable one. My preference of course would be for the earlier provision where you just eliminate the restriction and I think that the State regulatory authorities can still regulate there through the parent utility. But that's a minor point.

I think the ownership thing is important. It's important from two standpoints. I think No. 1 you have the electric utility industry that has access to capital markets and has knowledge of technical expertise and may participate in a project in such a way to make the project go, when as a result of the ownership description presently in case can go.

The other thing is, I was testifying in Wisconsin 2 weeks ago, I think it was, before the ad hoc committee on utility diversification. And we presented testimony out there in which we said to the committee, one of the things you ought to be very concerned about with respect to committing utilities to diversify and especially in the area of cogeneration and small power production, is that there are opportunities, largely due to the tax laws right now, where if a utility did diversify into this business and kept its diversification activity outside of the rate base, outside regulation, but did it just like any ordinary venture capitalist or other developer would do it, there would be benefits to the ratepayers by that form of development by that electric utility over what the benefits would be if the electric utility put that generating facility in its rate base. The cost would be higher to the electric consumers if they did the latter rather than the former.

We are working on an exhibit for that ad hoc committee which will explain how that works and we will be glad to furnish a copy of that exhibit to the subcommittee.

Senator Humphrey. I wish you would.

Mr. Brown. Those are my comments.

[The prepared statement of Mr. Brown follows:]

PREPARED STATEMENT

S. 1885 AND S. 1966

BEORE THE

SUBCOMMITTEE ON ENERGY REGULATION

By

Peter W. Brown
Director

ENERGY LAW INSTITUTE
Franklin Pierce Law Center
2 White Street
Concord, New Hampshire 03301

May 24, 1982

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S. 1885 and S. 1966

97th Congress of the United States

The Energy Law Institute (ELI) of the Franklin Pierce Law Center has been engaged in a number of studies of the problems of implementation of Title II of the Public Utility Regulatory Policies Act over the past four years. This activity has involved the staff of ELI in testifying before numerous state regulatory agencies on Title II, assistance to some fifteen state regulatory agencies in the implementation of Title II, assistance to the Tennessee Valley Authority and participation in numerous workshops and conferences on Title II throughout the United States. ELI has also been engaged by a variety of developers to assist them in power purchase arrangements and related financing activities. Peter W. Brown, Director of ELI and Professor of Law at the Law Center, has been principal investigator on several of the studies noted above and has been actively involved in the activities of ELI concerning Title II of PURPA. Professor Brown also teaches Energy Law and Policy and Public Utility Regulation at the Law Center.

A list of publications of ELI is attached to this Statement. Copies of these publications may be obtained either through the National Technical Information Service (NTIS) where NITS numbers are indicated or directly from ELI.

I. INTRODUCTION

This statement supports, with certain relatively minor proposed changes, the amendments in the nature of a substitute for S. 1885. The earlier version of S. 1885 removed the ownership limitations imposed on electric utilities which desired to invest in cogeneration and small power production facilities. See § 201 of the Public Utility Regulatory Policies Act of 1978 (PURPA). The author of this statement supported S. 1885 in its earlier version with the suggestion that it be amended to cure problems concerning interconnection requirements between electric utilities and qualifying facilities which problems were raised by the D.C. Circuit Court of Appeals' Opinion in the case American Electric Power Co., et al v. The Federal Energy Regulatory Commission, No. 80-1789 (D.C. Cir. Jan. 22, 1982) rehearing denied (April 9, 1982) (AEP).

The amendments to S. 1885 deal with the utility ownership restrictions and the problems raised by the AEP case in the overall framework of conferring greater authority and discretion on state regulatory commissions and unregulated utilities in administering Sections 201 and 210 of PURPA. The recognition of the greater role of state regulatory commissions and unregulated utilities in implementing PURPA is most salutary and altogether proper and fitting given the local and regional nature of the relationships between electric utilities and qualifying facilities. Moreover, the federal interest is preserved and protected in encouraging more efficient use of energy resources through cogeneration and greater development of alternative, indigenous sources of energy through small power production facilities by maintaining intact the basic achievements of PURPA;

the guarantee of a right of access to markets by qualifying facilities.

This statement will address each of the three major points of the proposed substitute and, where deemed appropriate, propose relatively minor amendments. The three major points are the "avoided cost" standard, interconnection standards and utility ownership provisions.

II. "AVOIDED" OR INCREMENTAL COSTS

Approximately two years after state regulatory authorities and unregulated utilities undertook implementation of Sections 201 and 210 of PURPA and regulations promulgated by the Federal Energy Regulatory Commission (FERC), the District of Columbia Court of Appeals in its opinion in AEP cast doubt and confusion on the efforts of state regulatory authorities and unregulated utilities. It is important to note that FERC, the state regulatory authorities and unregulated utilities were, for the most part, unfamiliar with the process of implementation. In the first place state regulatory authorities were setting wholesale rates and determining interconnection standards in an area where their regulatory authority had seldom, if ever, been exercised. Secondly, state regulatory authorities and unregulated utilities were setting rates for sales of power by qualifying facilities based on the marginal or, as FERC called it, the "avoided" costs of the purchasing utility.

The large majority of the state regulatory commissions and unregulated utilities undertook the tasks of implementation willingly and ably and a large measure of success, experimentation and achievement was attained in this two year period. The AEP decision, regardless of the merits or demerits of the actual holding of the case, threatens to undo these remarkable achievements.[1] No doubt there are disagreements as to the success and results of these efforts but these efforts represent a substantial achievement in this new area.

The court in AEP has held that there was sufficient evidence in the administrative record before FERC to permit FERC to establish full "avoided" costs as both a floor and a ceiling for rates for the sale of power by "new" qualifying facilities to electric utilities. By regulation, FERC had established full avoided costs as the minimum and the maximum for rates to be set by state authorities and state authorities, acting on that standard, had set about to determine rates. The court in AEP, it should be noted, did not hold that full avoided costs were not permitted by PURPA, but rather held that there was an insufficient rulemaking record. What the court overlooked or did not know was that on the heels of PURPA qualifying facilities were negotiating voluntary power purchase contracts with utilities pursuant to which electric power was being sold to utilities at less that full avoided costs resulting in benefits to ratepayers, utilities and qualifying facilities alike. Such voluntary contracts, while using PURPA rates as a guide, were not based on the PURPA rates and, of course, were authorized under FERC regulations.

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[1] On rehearing en banc, six of the eleven judges of the D.C. Circuit Court of Appeals refused to participate in the decision rehearing, somewhat predictably the three judges of the original panel agreed to reaffirm the original decision, and the two remaining judges dissented and voted to re-examine the decision.

The proposed substitute of S. 1885 will preserve intact the achievements of the state authorities in setting "avoided" costs where all segments of the industry agree and at the same time give the state authorities flexibility in tailoring rates to meet local conditions.

Under Section 3 the rates for purchases from qualifying facilities shall be "the incremental cost" of alternative electric energy of the purchasing utility unless the state agency, for good reason determines otherwise. The term "incremental cost" presumably means "avoided costs". The ratesetting standards in the present FERC regulations will continue to serve as guides to the state ratemaking authorities. However, if the state regulatory authority is requested by a utility to set a rate lower than full avoided costs it now may do so. This language will be helpful in addressing some of the problems that prompted the AEP litigation. With a large measure of concern and justification the Consolidated Edison Company of New York pointed out that property tax rates imposed by the City of New York on conventional electric utility property were higher than those taxes imposed on cogenerators. The company also argued less rigorous antipollution standards were imposed on cogeneration plants in the City. Consolidated Edison observed that it would have to pay full avoided costs to cogenerators when at the same time cogenerators received substantial benefits and Con Ed's ratepayers were having to pay high City property taxes and for the high costs of antipollution equipment on Con Ed generating plant.

Under the proposed substitute the New York Public Service Commission can clearly take the idiosyncrasies of the New York City cogeneration market into account in setting PURPA rates. If needs be the New York Public Service Commission may set Con Ed's cogeneration at some figure lower than avoided cost.

There have been suggestions that any language designed to rectify AEP and its holding on "avoided costs" should set the level at some percentage of full avoided costs and leave it to the state authorities to set the rates at a higher level if needs dictate. There are several problems with this approach. First, there is the danger that the percentage of full avoided costs would, in fact, become the ceiling forestalling development of qualifying facilities which would be economically feasible at a rate higher than the percentage of full avoided cost, but at a rate less than full avoided costs. In these instances economically feasible generation would not be developed, the public would be deprived of the further diversity in its electric generation mix represented by these forestalled facilities, and the ratepayers would be deprived of having power made available to them at a cost less than what their utility could provide for the same amount of power.

Second, such a provision ignores the voluntary power purchase contract market which has developed in recent years. In this market electric utilities, even with rates set at full avoided cost, are able to obtain benefits for their ratepayers of purchase power from qualifying facilities at less than full avoided costs. Finally, such a provision will undo much of the implementation work accomplished to date. In setting rates under the present FERC standards few, if any, commissions have made an explicit determination that full avoided costs are needed to meet local conditions, but rather they have followed the FERC standard as set forth in the FERC regulations. Under the suggestions to set rates at a percentage of avoided costs, it would appear that an explicit finding by a state authority would be required to exceed the percentage of avoided cost ceiling. At this writing, if such language were enacted, the state authorities would be confronted with a dilemma.[2] They could reduce the rates they have already set after weeks of hearings but they would not know the effect of such rates on the supply of power from qualifying facilities which would be economically feasible at a rate higher than the percentage ceiling and lower than full avoided cost. Moreover, under the percentage ceiling proposal they would have to reduce their rates, ab initio, even if all segments of the industry -- utilities, qualifying facilities and consumers alike -- were satisfied with the earlier implementation efforts.

If, under the percentage ceiling proposal, state authorities chose to exceed the percentage ceiling, they would have to reopen their proceedings, make the necessary findings and set a higher rate.

The language contained in Section 3 of the substitute resolves the dilemma. It preserves intact rates already determined unless a utility or ratepayer objects. If no one objects to the rates established under the earlier implementation efforts presumably the full avoided cost rates would remain in effect. If a utility objects, then the state authority would examine the grounds for the objection and choose to open or not to open a rate proceeding.

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[2] A review of the regulations, orders and opinions of some fourteen regulatory authorities, where the ELI has provided services, reveals that not one of these authorities examined explicitly the impact on the supply of power from qualifying facilities, electric generation diversity or a voluntary power purchase contract market of setting rates at full avoided costs. The authorities are TVA and the commissions in Arkansas, Colorado, Connecticut, Maine, Massachusetts, New Hampshire, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, and Virginia.

III. INTERCONNECTION STANDARDS

The decision in AEP held that FERC exceeded its authority under PURPA in promulgating interconnection regulations under Section 210 of the Act. The court stated that in view of the specific references to interconnection standards and conditions in amendments to Sections 210 and 212 of the Federal Power Act, FERC did not have independent authority under Section 210 of PURPA to promulgate its interconnection regulations.

As the author of this Statement noted in earlier testimony before this Committee on the earlier version of S. 1885, the interconnection standards and conditions of Sections 210 and 212 of the Federal Power Act are unnecessarily cumbersome and the regulatory standards promulgated by FERC under PURPA are, in contrast, reasonable, equitable and workable. See Statement of Peter W. Brown, April 19, 1982 before the Subcommittee on Energy Regulation.

Section 4(a) and (b) of the proposed substitute seeks to rectify the ambiguities of PURPA and the amendments to Sections 210 and 212 of the Federal Power Act by authorizing FERC to promulgate rules under Section 210 of PURPA for interconnection. With the minor exception discussed below the provisions of Section 4(a) and (b) resolve the problem. FERC is given the clear authority to promulgate regulations. As is the case under the FERC regulation declared invalid in AEP, the reasonable costs of such interconnections are to be borne by the qualifying facilities (Section 4(b)1)). Interconnection disputes can be resolved at the state level (Section 4(b)(3)). These provisions are appropriate.

However, in Section 4(b)(2) of the substitute, reference is made to four conditions established under Section 210 of the Federal Power Act. These four conditions are inept and, in one case, redundant. It is recommended, rather, that reference in Section 4(b)(2) be made to subparagraphs (2) thru (4) of Section 212(a) of the Federal Power Act. These three additional conditions protect the system from unreliable interconnection equipment, assure system safety, and protect the utility's ability to serve its customer loads.

Under this recommendation Section 4(b)(2) would read as follows:

> (2) such interconnection _shall take into consideration_ any of the matters referred to in subparagraphs _(2)_ thru _(4)_ of Section _212(a)_ of the Federal Power Act; and ...

(amending language underlined).

IV. UTILITY OWNERSHIP PROVISIONS

The utility ownership provisions of the earlier version of S. 1885 were the subject of an earlier prepared statement by the author of the present statement. See Statement of Peter W. Brown of April 19, 1982. The author supported removing restrictions on utility ownership of qualifying facilities in the previous statement and continues to urge that position here.

The earlier of version of S. 1885 in a straightforward manner amended Section 201 of PURPA to remove the restrictions of the statute which stipulated that a qualifying facility could not be owned by an electric utility. Because of its straightforward approach the earlier version of S. 1885 is preferable.

However, the same result may be accomplished under Section 1 of the proposed substitute. As Section 1 presently reads the ownership restriction imposed on utilities is removed for qualifying generators. The ownership limitations are retained for qualifying small power production facilities (wind, hydro, biomass, solar generating units).

However, state authorities may reimpose ownership restrictions on qualifying cogenerators and remove or tighten the ownership restrictions on qualifying small power production facilities (Section 1(b)). While it is not clear how this section will be implemented by unregulated utilities in a particular state, presumably most of the questions that may arise on utility ownership will involve investor owned utilities which are already subject to state commission regulation. The additional authority conferred on the states by this section may be redundant and will involve some overlap with Securities and Exchange Commission regulation of registered holding companies under the Public Utility Holding Company Act. Under these circumstances and as noted above, the earlier version of S. 1885 is preferable.

HYDROELECTRIC DEVELOPMENT REPORTS

Executive Summaries:

EXECUTIVE SUMMARY: LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN THE SIX NEW ENGLAND STATES - 1980 ($5.15)

EXECUTIVE SUMMARY: LEGAL OBSTACLES & INCENTIVES TO SMALL SCALE HYDROELECTRIC DEVELOPMENT IN THE MID-ADLANTIC STATES (Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia) - 1979 ($4.65)

EXECUTIVE SUMMARY: LEGAL OBSTACLES & INCENTIVES TO SMALL SCALE HYDROELECTRIC DEVELOPMENT IN THE SEVEN MID-WESTERN STATES (Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia, Wisconsin) - 1979 ($6.30)

State Reports

State reports have been prepared pursuant to grants from the United States Department of Energy (DOE) and the National Conference of State Legislatures (NCSL).

All reports analyze legal topics relating to hydroelectric development including Licensing, Public Utility Regulations, Taxation, Financing, Acquisition of Land and Water Rights.

The concentrations of many of the reports are on small scale hydroelectric development, but some reports (especially those for NCSL) discuss the factors relating to hydropower development of all sizes.

AN ANALYSIS OF LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER.

ALASKA	1979	NCSL ($6.50)
ARKANSAS	1981	NCSL ($5.20)
ARKANSAS SUMMARY	1981	NCSL ($2.45)
CONNECTICUT	1979	DOE ($5.10)
CONNECTICUT	1981	Revised & Expanded - NCSL ($4.55)
DELAWARE	1979	DOE ($6.45)
GEORGIA	1978	NCSL ($2.15)
HAWAII	1980	NCSL (Unavailable)
ILLINOIS	1979	DOE ($5.75)

ILLINOIS	1981	Revised & Expanded - NCSL ($5.00)
ILLINOIS SUMMARY	1981	NCSL ($2.45)
INDIANA	1979	DOE ($4.85)
KENTUCKY	1979	DOE ($7.60)
MAINE	1980	DOE ($6.65)
MAINE	1980	Revised & Expanded - NCSL ($3.85)
MARYLAND	1979	DOE ($4.90)
MASSACHUSETTS	1980	DOE ($5.20)
MICHIGAN	1979	DOE ($4.65)
MINNESOTA	1981	NCSL ($3.05)
MISSOURI	1982	NCSL ($4.35)
MISSOURI SUMMARY	1982	NCSL ($2.90)
MONTANA	1980	NCSL (Unavailable)
NEW HAMPSHIRE	1980	DOE ($6.25)
NEW JERSEY	1979	DOE ($5.15)
NEW YORK	1979	DOE ($8.30)
NEW YORK	1981	Revised & Expanded - NCSL ($3.85)
NORTH CAROLINA	1979	NCSL ($3.20)
OHIO	1979	DOE ($5.85)
OREGON	1980	NCSL ($3.85)
PENNSYLVANIA	1979	DOE ($4.90)
PENNSYLVANIA	1980	Revised & Expanded - NCSL (Unavailable)
RHODE ISLAND	1980	DOE ($6.50)
SOUTH CAROLINA	1980	NCSL ($3.85)
TEXAS	1980	NCSL ($3.15)
UTAH	1981	NCSL ($2.25)

UTAH SUMMARY	1981	NCSL ($1.75)
VERMONT	1980	DOE ($6.00)
VIRGINIA	1979	DOE ($3.80)
VIRGINIA	1981	Revised & Expanded - NCSL $4.80)
VIRGINIA SUMMARY	1981	NCSL ($2.40)
WEST VIRGINIA	1979	DOE ($8.40)
WISCONSIN	1979	DOE ($5.60)
WYOMING	1981	NCSL ($5.05)

PRELIMINARY LEGISLATIVE ISSUES AND OPTIONS TO ENCOURAGE HYDROELECTRIC DEVELOPMENT

State Reports:

ALASKA	1980	NCSL ($3.45)
HAWAII	1980	NCSL ($3.20)
MICHIGAN	1980	NCSL ($1.10)
MONTANA	1980	NCSL ($3.05)
NORTH CAROLINA	1980	NCSL ($1.40)
OREGON	1980	NCSL ($2.15)
PENNSYLVANIA	1980	NCSL ($1.45)
SOUTH CAROLINA	1980	NCSL ($1.45)
TEXAS	1980	NCSL ($2.65)

SELECTED ISSUES AND OPTION TO ENCOURAGE HYDROELECTRIC DEVELOPMENT

State Reports:

NORTH CAROLINA	1980	NCSL ($1.55)
MONTANA	1980	NCSL ($1.85)
PENNSYLVANIA	1980	NCSL (Unavailable)
SOUTH CAROLINA	1980	NCSL ($1.40)
WISCONSIN	1980	NCSL ($3.95)

DRAFT LEGISLATION TO ENCOURAGE HYDROPOWER DEVELOPMENT

State Reports:

HAWAII	1980	NCSL	($1.70)
MONTANA	1981	NCSL	(Unavailable)
NEW HAMPSHIRE	1981	NCSL	($2.95)
NORTH CAROLINA	1980	NCSL	(Unavailable)
SOUTH CAROLINA	1980	NCSL	(Unavailable)
VIRGINIA	1982	NCSL	(Unavailable)
WASHINGTON	1979	NCSL	(Unavailable)
WISCONSIN	1981	NCSL	(Unavailable)

HYDROELECTRIC DEVELOPMENT REPORTS

Federal and General Reports:

PRELIMINARY ANALYSIS OF LEGAL OBSTACLES TO THE DEVELOPMENT OF LOW-HEAD HYDROELECTRIC POWER IN THE NORTHEASTERN UNITED STATES, Rev. March 1979 ($5.55)

FEDERAL LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POTENTIAL OF THE NINETEEN NORTHEASTERN UNITED STATES, Rev. August 1980 ($16.50)

EXECUTIVE SUMMARY: FEDERAL LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF SMALL SCALE HYDROELECTRIC POWER IN THE NORTHEASTERN UNITED STATES, December 1978, Rev. August 1980 ($4.20)

LEGAL AND INSTITUTIONAL ASPECTS OF HYDROELECTRIC POWER DEVELOPMENT AND OPERATION - NATIONAL HYDROELECTRIC POWER RESOURCES STUDY, July 1981. (Review Draft available from U.S. Army Corps of Engineers.) ($14.00)

DAM SAFETY, EIS INTERACTION, August 1978 ($1.00)

RECENT FEDERAL ACTION ON DAM SAFETY, August 1978

LEGAL INSTITUTIONS AFFECTING LAKE LEVEL REGULATION IN MAINE, February 1979 ($1.95)

PROPOSALS FOR CHANGES IN THE TAXATION OF HYDROELECTRICITY, October 1979 ($2.20)

RECOMMENDED LEGISLATIVE ACTION FOR IMPLEMENTING THE OPTIONS FOR FINANCIAL ASSISTANCE TO HYDROELECTRIC DEVELOPMENT IN ALASKA PREVIOUSLY PRESENTED TO THE ALASKA JOINT SPECIAL COMMITTEE ON RENEWABLE ENERGY POLICY, February 1980 ($1.30)

RECOMMENDED LEGISLATIVE OPTIONS FOR STATE FINANCIAL ASSISTANCE TO HYDROELECTRIC DEVELOPMENT IN ALASKA, January 1980 ($2.30)

A HYDROELECTRIC DEVELOPMENT PLAN FOR DAMS OWNED BY THE NEW HAMPSHIRE WATER RESOURCES BOARD, Submitted to The Governor's Council on Energy, State of New Hampshire, January 1980 ($2.45)

COMMENTS ON THE DRAFT REGULATIONS PROVIDING FOR EXEMPTION OF SMALL HYDRO PROJECTS AND RELATED MATERIALS, FERC Docket No. RM80-65, August 1980 ($1.55)

Case Studies:

A CASE STUDY ANALYSIS OF LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE POTENTIAL HYDROELECTRIC DEVELOPMENT AT HIGH FALLS STATE PARK, GEORGIA, September 1979 ($4.40)

A CASE STUDY ANALYSIS OF LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF THE HYDROELECTRIC POTENTIAL AT GOOSE RIVER, MAINE, September 1979 ($6.10)

A CASE STUDY ANALYSIS OF LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF THE HYDROELECTRIC POWER OF THE BOARDMAN RIVER AT TRAVERSE CITY, MICHIGAN, September 1979 ($10.00)

A CASE STUDY ANALYSIS OF LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF THE HYDROELECTRIC POWER AT THE MAXWELL LOCKS AND DAM, PENNSYLVANIA, September 1979 ($5.00)

A CASE STUDY ANALYSIS OF LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF THE CORNELL HYDRO PROJECT AT CORNELL, WISCONSIN, September 1979 ($5.70)

EXECUTIVE SUMMARY OF THE LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF HYDROELECTRIC POWER, A Synthesis of Five Case Studies, 1979 ($5.35)

Hydroelectric Development Financing Reports:

THE FINANCING OF PRIVATE SMALL SCALE HYDROELECTRIC PROJECTS, March 1981 ($7.25)

A MANUAL FOR DEVELOPMENT OF SMALL SCALE HYDROELECTRIC PROJECTS BY PUBLIC ENTITIES, March 1981 ($3.10)

A SUMMARY GUIDE TO THE FINANCING OF PRIVATE SMALL SCALE HYDROELECTRIC PROJECTS, May 1981 ($1.50)

ECONOMIC REPORTS

FUNDAMENTAL ECONOMIC ISSUES IN THE DEVELOPMENT OF SMALL SCALE HYDRO, January 1979 ($2.30)

TWO ECONOMIC PAPERS: (I) MONOPSONY AND THE SUPPLY OF POWER FROM SMALL GENERATING STATIONS: (II) A PRELIMINARY ECONOMIC ANALYSIS OF THE VALUE OF CONTRIBUTIONS BY SMALL DAMS TO SYSTEM GENERATION RELIABILITY, November 1978, Rev. August 1980 ($2.50)

PUBLIC UTILITY REGULATORY REPORTS

REPORT TO THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION: RE THE IMPLEMENTATIONS OF THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978 TO CERTAIN PROCEEDINGS BEFORE THE N.H. P.U.C., April 1979

COMMENTS ON THE PROPOSED REGULATIONS UNDER SECTION 201 AND THE STAFF DISCUSSION PAPER ON SECTION 210 OF THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978 - FERC Docket No. RM79-54 and RM79-55, October 1979 ($2.00)

COMMENTS ON THE PROPOSED REGULATIONS IMPLEMENTING SECTION 210 OF THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978, FERC Docket RM79-55, December 1979 ($3.00)

PUBLIC TESTIMONY BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION CONCERNING THE PROPOSED REGULATIONS IMPLEMENTING SECTION 210 OF THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978, December 1979 ($1.30)

PURPA SECTION 210: FINAL REGULATIONS. A Section-by-Section Analysis. June 1980. ($2.45)

IMPLEMENTATION OF PURPA SECTION 210: The Federal Mandates to State Regulatory Authorities, June 1980 ($.90)

STATE IMPLEMENTATION OF THE REGULATIONS PROMULGATED PURSUANT TO SECTION 210 OF PURPA: Implementation Options, June 1980 ($1.50)

REGULATORY ISSUES PERTINENT TO THE IMPLEMENTATION OF SECTION 210 OF PURPA, June 1980 ($.90)

IMPLEMENTATION OF SECTION 210, OF PURPA IN THE FIFTY STATES, (updated monthly)

A SUBSTANTIVE SURVEY OF THE IMPLEMENTATION OF SECTION 210 of PURPA ($1.10)

WIND ENERGY REPORTS

LEGAL AND INSTITUTIONAL OBSTACLES TO THE DEVELOPMENT OF LARGE SCALE WIND ENERGY CONVERSION SYSTEMS IN THE STATE OF NEW HAMPSHIRE, November 1979 ($7.70)

AN ANALYSIS OF THE LEGISLATIVE INITIATIVES OF THE 96TH CONGRESS TO ACCELERATE THE DEVELOPMENT AND DEPLOYMENT OF WIND ENERGY CONVERSION SYSTEMS, 1980 ($2.40)

CONFERENCE REPORTS

Summary of "A CONFERENCE FOR NEW ENGLAND: LEGAL AND INSTITUTIONAL OBSTACLES AND INCENTIVES TO SMALL SCALE HYDROELECTRIC DEVELOPMENT," January 30-31, 1979, Boston, Mass. ($5.20)

Summary of "SMALL SCALE HYDROPOWER IN THE MID-ATLANTIC STATES: RESOLUTION OF THE BARRIERS IMPEDING ITS DEVELOPMENT," May 4-5, 1979, Washington, D.C. ($7.05)

Summary of "SMALL SCALE HYDROPOWER IN THE MIDWEST: AN OLD TECHNOLOGY WHOSE TIME HAS COME," November 14-15, 1979, Detroit, Michigan ($9.70)

PAPERS PRESENTED BY THE ENERGY LAW INSTITUTE STAFF

RECENT FERC REGULATORY INITIATIVES THE BENEFITS AND PITFALLS TO SMALL SCALE HYDROELECTRIC DEVELOPERS, by Peter W. Brown, March 1982 ($1.30)

STATE LICENSING SYSTEMS, SMALL SCALE HYDROELECTRIC PROJECTS, by Peter W. Brown, May 1980 ($1.60)

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Senator HUMPHREY. Thank you for putting things back into perspective.

If this bill is enacted with the language intact, what is your legal opinion of the effect that it would have on the pending court cases, on the validity of State mini-PURPA's?

Mr. BROWN. I think I'll have to divide that question up into three parts. With respect to the *Mississippi* case, I don't think it would have any great effect because the question there is, can this Congress mandate a regulatory commission to do certain things and we still are mandated that they do certain things.

With respect to AEP, I think it renders moot interconnection and avoided cost issues raised in AEP.

With respect to——

Senator HUMPHREY. Renders moot that decision?

Mr. BROWN. Yes; the two parts of that decision which were adverse to the cogeneration, small power production industry.

With respect to the constitutionality of State mini-PURPA's, I don't think this bill says anything one way or the other as to whether or not that legislation is constitutional. To be honest with you, Senator, that's a very difficult issue right now given what has happened under the history of the present Federal Power Act, what has happened with respect to PURPA since 1978, and what has always been traditional State regulatory authority.

One of the arguments it seems to me, and I think the New York Public Service Commission is making this argument, is that they have the authority to regulate these transactions between qualifying facilities and electric utilities because they have the authority and the obligation to require their electric utilities to serve a load in their State and that electric utility by virtue of legislation has the authority and the obligation most importantly the obligation, to service every load in its service territory. If you're going to serve a load in your service territory, and that's a State law requirement, there's a very short step to require them to interconnect with that load and buy power from that load.

On the other hand there's the argument of the wholesale regulation of electric utility transactions has traditionally been a function of the Federal Government and the Federal Power Commission and now the FERC. I don't think this bill will affect those arguments, and if somebody brings a law suit I think it's probably going to come in New York if it comes anywhere first.

The issue will be joined.

Senator HUMPHREY. You have a good deal of experience in helping States implement section 210. How smooth or disruptive in your opinion would be the implementation of this bill for the States?

Mr. BROWN. I think there won't be any major disruption. I think any other solution will cause a disruption, Senator. I think what I see happening is in those areas where the regulating body or the utilities themselves have difficulty with PURPA such as in New York, and I can fully understand why Con Ed takes the position that it does right now. I think I mentioned that in my testimony.

There is where you have the utilities will go in and say OK, public utility commission, do something to take into account the idiosynchrosies of this market. And I think the public service commission would be wise to pay attention to that.

On the other hand in California where there are 60 percent oil fired and capacity is short, and everybody is out there trying to buy as much capacity as they possibly can, as much of nonoil-fired generation as they can, they're going to say really all we want the public utility commission in that State to do is kind of pay attention a little bit. If there is too much problem then we'll go out and negotiate the contracts.

In New England it is the same way. We are capacity long, but we are 60 percent oil fired again. People are going to be looking around to buy nonoil-fired generation and from what I can tell in our region, Senator, the Public Service Company of New Hampshire and other utilities are looking very carefully at and have negotiated voluntary contracts, less than avoided cost. So those are the things that are going to happen.

And I think where utilities have objection they'll come in and there will be a proceeding. Where they don't, things will go on as they have.

Senator HUMPHREY. What about the effect of stipulating some avoided cost standard percentage?

Mr. BROWN. A percentage? The percentage would be the problem. If the bill said it should be 90 percent unless the State regulatory body wanted to go above it, on our count 13 or 14 State regulatory bodies would have to go in and examine those regulations. Even though someone wouldn't complain, I mean there were people who were all satisfied with it. So the 90 percent would be disruptive.

I think with respect to the general standards applied in the statute, one is, does it give the ratepayers a break? Two, does it encourage cogeneration as far as power production? And three, is it in the public interest to the extent that you encourage diversity? I think those standards are workable. They're just as workable as the just reasonable and nondiscriminatory standards that apply almost uniformly throughout the country by State regulatory bodies.

Senator HUMPHREY. Is it your opinion, or would 90 percent be more disruptive than no bill at all?

Mr. BROWN. It's six of one and half a dozen of the other. Either way you're going to have to do a lot of reexamination.

I think the uncertainty presented by AEP is significant. And I think also the fact that you have to reexamine that standard on the basis of the 90 percent of a full avoided cost, will be an uncertainty as well.

I think the cogeneration and small power producers will say that 90 percent could very well become the ceiling, and we don't want that. And I don't think you want it either. I think if there's a cogenerator that can come on at 93 percent of the avoided cost, you ought to let them do it. There's a benefit there to the ratepayers as well as the large utility because you've saved that 7 percent.

Senator HUMPHREY. The witness from California, Mr. Bjorklund, said about 90 percent, in about 90 percent of the proceedings that it came in under the full avoided cost. Is that typical around the country?

Mr. **Brown**. That is my understanding. I can't speak to the southwest with the exception of California. But in the mid-Atlantic, northeast and midwest, it seems to be typical. I can't give you numbers, but the number there of 93 percent on the average of avoided cost seems to be what it should be.

Senator **Humphrey**. Does the language in the bill give the States latitude, sufficient latitude to establish a number of different power purchase rates, distinguishing perhaps between new and existing facilities?

Mr. **Brown**. Yes, I think so. I think when you say encourage cogeneration and small power production you want to look at what's coming down the road. Something has come on prior to the passage of this legislation or prior to the passage of the PURPA legislation. You can say you don't need to encourage that any more. It was encouraged. It was encouraged prior to the passage of this legislation and you as a utility commission can make a distinction between all the new capacity on the basis of that alone, and I think that's the basis that FERC makes the distinction on the present regs, between old and new capacity. So I wouldn't have any problem with that.

Senator **Humphrey**. Very well.

Thank you very much, Mr. Brown, we appreciate your help.

The record will remain open for 2 weeks for the submission of written testimony and answers to questions.

This meeting stands adjourned.

[Whereupon, at 12:30 p.m., the hearing was adjourned.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

June 8, 1982

Hon. Gordon J. Humphrey, Chairman
Subcommittee on Energy Regulation
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Re: Substitute for S. 1885 (Cogeneration)

Dear Mr. Chairman:

Thank you again for the opportunity to present the views of Consolidated Edison Company at the May 24 hearing on your pending bill on cogeneration. I would like to submit this letter to respond to certain issues raised by other witnesses.

The Need For a Scarce Fuel (Oil and Natural Gas) Savings Test

Mr. David Milne of Brooklyn Union Gas Company suggested that cogeneration will save oil because it uses fuel efficiently. We do not dispute that cogeneration uses fuel relatively efficiently and that it will save oil in many cases. But there are many cases in which oil-fueled cogeneration will not save oil. Indeed, it will frequently cause increased oil demand and increased oil imports.*

---

* Obviously, where cogeneration using oil displaces coal-fueled utility generation, cogeneration will not save oil, no matter how efficiently it uses fuel. Even when oil or gas-fueled cogeneration is located in an oil-dependent electric utility's service area it often will not reduce oil and gas use. This is because in urban applications much of a cogeneration system's recoverable waste heat cannot be utilized; and, therefore, its inherent efficiency cannot be achieved. In spring and fall, and also in summer in the absence of steam-powered air conditioning or other large thermal loads, much of the recoverable waste heat must be dumped because it is not needed. What we really have in such cases is oil-fueled generation, not cogeneration. Further, as the utility industry converts its oil-burning plants to burning coal, this urban cogeneration will be even more likely to increase oil use.

What is needed, therefore, is a scarce fuel savings test. Such a test will separate those cogeneration plants that can save oil or natural gas from those that will cause increases in the use of these scarce fuels. As explained in the written statement submitted by Consolidated Edison Company at the May 24 hearing, the test we are proposing is simple and its adoption is essential if we are to prevent the encouragement of cogeneration facilities whose operation is contrary to the national interest.

Scarcity of Gas Supplies

Mr. Milne asserted that there will be an adequate supply of natural gas for many years to come and argued that it should be made available to cogenerators. We find Mr. Milne's assertion about gas supply to be unduly optimistic.*

While it is possible that there will be an adequate supply of gas in the future, it is far from certain. Even the most optimistic reports forecast a decline in natural gas supplies from conventional sources. Those who claim that gas supplies will increase base their beliefs on a "supplemental wedge" of new supplies. This "supplemental wedge" consists mainly of gas from Alaska, from Devonian shale, from Western tight sands, from geopressured zones, and from coal seams. All of these high risk technologies have huge capital requirements. In the words of O.C. Davis, Gas Supply Committee Chairman of the American Gas Association:

> "the 'wedge' of supplementals the industry is going to need is truly enormous. The capital acquisition and financial program to be undertaken is consequently enormous as well, and must begin to intensify, even more than at present, as soon as possible. Most of the major transmission systems are working on unconventional projects now and the problems of financing, government regulation and various aspects of supply

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* Indeed, another representative of Brooklyn Union Gas Company also finds Mr. Milne's outlook for gas supply unduly optimistic. In testimony presented to the Federal Energy Regulatory Commission, Mr. Joseph P. Stevens warned of a "gas shortage." (The relevant portion of Mr. Stevens' testimony is quoted at page 12 of the written statement submitted by Consolidated Edison Company at the May 24 hearing).

> planning in connection with these projects are far beyond anything we have attempted to solve in the past. Many of the future problems in achieving supplemental supplies rest in Washington, in areas of legislation and regulation."

Since that statement was made in June 1979, the forecasted price for oil has been reduced and government involvement in high-risk gas supply projects has all but ended. Where will the billions of dollars needed for development of supplemental gas supplies come from?

Given the persistent loss of gas reserves during the past decade and the uncertainty of future gas supplies, gas should not be committed to new, long-term uses such as new cogeneration facilities, which, when the supply of gas dries up or when prices are driven up by the high cost of supplemental gas supplies, will be forced to switch to oil. Instead, gas should be saved for high priority uses and as a temporary substitute for existing oil burning facilities which can switch back to oil as gas supplies diminish.

Reliability of Cogenerators and Their Interconnection to Utility Systems

In his testimony, Mr. Milne claimed that cogeneration plants operate more reliably than electric utility plants. Whether or not cogeneration plants are reliable when they operate independently of utility systems is not as important as whether they are compatible with the electric utility systems and whether they can be interconnected to such systems without adversely affecting the reliability service rendered by utilities to their customers. As more fully set forth in Appendix C to the written statement submitted by Consolidated Edison Company at the May 24 hearing, interconnection of cogenerators to the utility systems raises a number of technical problems that require careful evaluation.

In response to one of your questions, Ms. Suzan Shanaman testified (on behalf of the National Association of Regulatory Commissioners) that under no circumstances could interconnection of a cogeneration facility to a utility system impair the safety or reliability of utility service. With all due respect, Ms. Shanaman's statement is erroneous. As set forth in more detail in Appendix C to the written statement submitted by Consolidated Edison Company at the May 24 hearing, cogenerators can cause frequency and voltage problems that can lead to power interruptions. The operation of cogeneration systems can also cause overloads on the utility system, which, under certain system conditions, could cause the shutdown of an entire network area of the utility.

The expert witness for the Staff of the New York Public Service Commission ("PSC") also testified in the PSC's cogeneration proceeding that it is "impossible to stipulate universal acceptability of any particular decentralized generating facility:"

> "Q. Do you feel that any decentralized generating facility can be interconnected without specific systems studies?
>
> A. I would recommend that no potential generating facility, regardless of its size, be interconnected without first having been analyzed by the company to determine its compatibility with the existing distribution system. It is impossible to stipulate universal acceptability of any particular decentralized generating facility because of the variability of network-specific criteria. Furthermore, until such time as experience has been gained with specific cases, it would not be prudent to obligate the company to automatically accommodate all installations of a certain type since their cumulative impact could result in a degradation of the company's service quality. It would also be unfair to the potential decentralized generation customer to be falsely misled into thinking that his installation could be accommodated on a long-term basis where specific studies might have shown potentially unacceptable operation of the company's network in the vicinity of his generator.*"

---

* PSC Case 27574, Consolidated Edison Company of New York, Inc. -- Electric Service Provided to Customers with On-Site Generation, Tr. 2928.

Given the potential problems involved in interconnection of cogenerators to utility systems, I urge you to amend S.1885 by removing the absolute obligation to interconnect and replacing it with a provision requiring interconnection only if it is determined that the interconnection:

a) is in the public interest;

b) will not place undue burden on the electric utility;

c) will not unreasonably impair the reliability of any electric utility affected by the order; and

d) will not impair the ability of any electric utility affected by the order to render adequate service to its customers.

Environmental Protection

I am concerned that the environmental effects associated with the proliferation of diesel cogeneration plants have been largely ignored and urge you to consider this matter. We are joined in our concern by the Sierra Club. I am submitting a letter from the Chairman of their New York City Group, Mr. Stephen F. Wilder, which expresses the Sierra Club's concern about this matter.

Respectfully submitted,

Peter Garam

PG:amb

cc: Ms. Suzan M. Shanaman, NARUC
Mr. David J. Milne, Jr., Brooklyn Union Gas Company
Mr. Stephen F. Wilder, Sierra Club

SIERRA CLUB NEW YORK CITY GROUP "to enhance and protect by all lawful means the natural resources and human environment of the U S and of the earth in general and in particular to enhance and protect the urban environment to educate the people concerning these matters to to enlist public interest and co-operation"
~~[illegible]~~
228 East 45th Street, New York N Y 10017 212-687-7666
address for reply

Mr. Arnold Rosenthal
Consolidated Edison
4 Irving Place
New York, New York

Dear Mr. Rosenthal:

Thank you for bringing to my attention the congressional hearings that touch on diesel cogeneration. I hope you will submit this letter and the attached letter of 28 November 1979 for the hearing record.

I am very discouraged that FERC is issuing "qualifying status" to diesel cogenerators even though the Final EIS is still under appeal on this matter.

The attached statement sets out our position in some detail, but let me summarize one aspect of it by reminding you how often we are opponents of Con Edison: It is more efficient to fight for low emissions from the operators which emit large quantities of combustion gasses. We therefore aim first at the public utilities. (A convenience here is that you are already under public regulation.) Smaller polluters, such as apartment houses and office towers, are much more difficult to control simply because there are so many of them, spread all over the city. They do need attention, especially because they emit at low altitudes and therefore the exhaust plume reaches human beings while still in quite concentrated form. (So that's why utilities and factories have tall stacks!)

Therefore we dread the blossoming of dozens or even hundreds of diesel cogeneration units in a densely populated area. Diesel exhaust has large amounts of NO_x and particulates, neither of which is beneficial in the slightest degree.

Although the attached statement was written 2½ years ago, the only significant change to be made is that our membership in New York City and in New York State has nearly doubled, 8,800 and 16,000 respectively. I mention this because we have not conducted a marvelously successful recruitment campaign, and therefore this growth seems to indicate a widespread and strong concern by the general public for the quality of our environment. My fellow members of the Executive Committee and I share such a concern and look to Congress to act appropriately.

Please keep in touch with us on this matter.

Sincerely yours,

Stephen F. Wilder
Chairman

4 June 1982

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Comments on Proposed Rule-Making RM 79-54 and RM 79-55 of the Federal Energy Regulatory Commission.

28 November 1979

My name is Stephen F. Wilder. I am the Chairman of the New York City Group of the Sierra Club. The statement I am about to read was prepared by Roger Liddell who is our Vice Chairman. He is unable to be here because he is on jury duty. Mr. Liddell is also a member of the Executive Committee of the Atlantic Chapter of the Sierra Club and so this presentation is on behalf of and for the Atlantic Chapter and the New York City Group of the Sierra Club with its 9500 members across the State and 4500 in this City.

This testimony will focus on the appropriateness of diesel cogeneration in high-density urban areas like New York City. Reference will be made to the Federal Energy Regulatory Commission Staff's preliminary Environmental Assessment (EA).

In essence, Ferc's position is that cogeneration should be encouraged unless compelling reasons can be shown for not doing so. Incentives are justified in the belief that cogeneration will lower the cost of energy to society. Sierra Club has long advocated measures to raise the efficiency of producing and using energy. Like Ferc, Sierra Club would generally support the spectrum of cogeneration projects, except for those with unacceptable environmental impacts. Under certain conditions, diesel cogeneration might be entirely justified--but not in high-density urban areas.

Based on present technology and information at hand, Sierra Club would support disincentives for diesel cogeneration in high-density urban areas like New York City. Incidentally, the crazy tax situation here in New York on Con Ed has already given diesel cogeneration an indirect tax incentive--which should be promptly removed.

Our opposition to any incentives for diesel cogeneration in such areas is based on our belief that diesel cogeneration would result to higher energy costs to society, the direct opposite of our common goal. We refer, of course, to total costs to society, not just out-of-pocket expenditures by energy users.

PUBLIC HEALTH AND SAFETY

Diesel emissions from both vehicular and stationary sources are embarrassingly rich in pollutants. Ferc's Staff admits that no satisfactory control mechanisms exist now (EA, p. 29). Recent evidence from California suggests that several years will elapse before significant pollution reductions can be acheived on diesel engines. One current approach follows the dual-catalyst pattern for gasoline engines--with the unusual maintenance requirement of steam cleaning the NO_x reduction catalyst. Sierra Club has no confidence that control mechanism, when and if developed, will actually be retrofitted on units put in service between now and then--witness the resistance to scrubbers.

NO_x--oxides of nitrogen--are belatedly being recognized as directly detrimental to

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public health and safety. The evidence is mounting that meeting an ambient NO_x standard may prove difficult if not impossible in most urban areas. In light of this, Staff's suggestion that the Clean Air Act and other control mechanisms should "assist in reducing or eliminating any adverse effects" (p.95) strikes us as somewhere between naivety and wishful thinking. We believe Ferc should not provide any for a new source of NO_x, especially a source so rich in NO_x as the diesel.

Sierra Club believes that the health impact of fine particulate matter is not clearly recognized. Fine particulate matter has come under suspicion as having physiological impact far, far greater than that of large particles. After all, the large ones get filtered out in our nostrils, throat and trachea. Only the fine ones reach the lungs, and the finer they are the further they get. Yet no specific discussion of fine particulate matter appears in the EA. Staff refers only to "visible smoke particulates" (p. 28), apparently suggesting that "if you can't see it, it can't hurt you."

Sierra Club also believes that insufficient attention is given to carcinogenic compounds such as benzo(a)pyrene which are released in the diesel exhaust. Research into this matter is now underway under the auspices of the EPA. The results should be available by 1981. We do not know what EPA will conclude; but based on data presently available, adverse findings seem likely. Despite this, we find no discussion in the EA of carcinogens, nor of the potentiating effect of fine particulate matter to which they so readily adhere.

In summary, we believe that retrofit of present-day diesel engines to control pollutants will prove prohibitively expensive and thoroughly unlikely. Engine replacement or shutdown of installed diesel cogeneration facilities because of unacceptable emissions would burden society with costs that could and should have been avoided. Continued operation of uncontrolled diesels in high-density urban areas despite unfavorable EPA findings will trigger litigation by environmental groups, an expensive undertaking for all concerned.

SPECIFIC CRITICISMS

1. Staff characterizes the environmental impact on human safety and health of multiple diesel cogeneration units as "moderate" (p. 30). We deem this absurd, in view of the above.

2. Staff claims that the environmental effects or impacts associated with diesel cogneration were "identified and insofar as possible quantified" (p.91). On the contrary, there is no quantification and only simplistic attempts at identification.

3. Staff assumes that "other forces (e.g., the high and ever-increasing costs of fuel oil) will have a restricting influence on its use." (p. 93). We find this assumption unacceptably vague and devoid of usefulness for policy-making. Furthermore, why should any incentive be granted which stimulates investment in diesel cogeneration when the fuel to which it is inextricably tied is subject to "potential limits on supply due to embargo, shortage, government allocations and other factors" (p. 95).

4. Staff takes a myopic view of single units of diesel cogeneration: a little badness is not significant although multiple badness may be. This seems similar to treating high-density urban area like New York City like the proverbial drunk who is convinced that just one more little one won't hurt. The EPA standards address ambient air quality. Ambient means where humans are likely to breathe it, not at a car's exhaust pipe, not at the top of a smokestack, but at the sidewalks and in our buildings. Long before the EPA, smokestacks were made tall so the fumes would dilute before they reached people. But let's look at what's happened only one block from here at Eleven

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West 42nd Street. Manhattan's first diesel cogeneration unit is now in action. I call to your attention that the top of the smokestack is shorter than the adjacent office buildings. In one of those buildings the windows can be opened. If the wind is right--or I should say wrong--look what happens to the neighbors. Sierra Club testified at the relevent hearings and one result was that we were promised extensive monitoring. Even the landlord promised to kick in $50,000, iffI remember correctly. Such monitoring is vital to better understanding of the effects of diesel cogeneration in high-density urban areas where buildings are varying height are side by side. The results of such monitoring would be useful guidance for you in making your decisions.

CONCLUSION

The Sierra Club Atlantic Chapter and the Sierra Club New York City Group are opposed to any incentives which would cause installation of diesel cogeneration in high-density urban areas for the reasons elaborated above. We do not proscribe all forms of cogeneration in high-density urban areas: for example, we are on record as supporting fuel cells when available. But no further commitment to diesel is warranted now, not until public health and safety issues are more clearly understood.

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WRITTEN STATEMENT
OF THE
AMERICAN GAS ASSOCIATION
BEFORE THE
SUBCOMMITTEE ON ENERGY REGULATION
OF THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
U.S. SENATE
ON
S. 1885, A BILL TO AMEND THE
PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978
MAY 24, 1982

- -

The American Gas Association (A.G.A.), a national trade association which represents nearly 300 natural gas transmission and distribution companies serving over 160 million consumers in all 50 states, welcomes this opportunity to provide its comments on S. 1885 as amended by Amendment No. 1452 relating to incentives for cogeneration (Cong. Record S5432, May 18, 1982). We commend Chairman Humphrey and the members of this Subcommittee for their timely consideration of this bill.

A.G.A. strongly supports the provisions in Sections 2-4 of S. 1885 as amended relating to rates for purchase of cogenerated electricity from qualifying facilities and interconnection authority. It should be noted that A.G.A. takes no position with regard to the level of permissible electric utility ownership of a qualifying facility.

Natural gas currently provides about 27% of U.S. energy supplies. Gas is used in about 55% of all residential and commercial establishments in the U.S. industry. More gas is produced domestically than any other fuel.

A.G.A.'s members have a direct and vital interest in the efficient use of natural gas. A.G.A. strongly supports cogeneration as a means of reducing total U.S. energy consumption through the utilization of what would otherwise be wasted energy. We oppose unreasonable restrictions or impediments which tend to limit the use of cogeneration.

Natural gas is the fuel of choice for most cogeneration applications. It is clean, highly efficient, easy to use, and the gas-fired cogeneration equipment is readily available. In contrast, equipment which does not use natural gas is generally less efficient. In addition, cogeneration using alternative fuels has associated environmental and fuel handling costs well beyond those of gas.

A.G.A. has established five general positions with reference to cogeneration:

- A.G.A. strongly supports cogeneration as a means of reducing total U.S. energy consumption.
- A.G.A. supports the removal of all fuel use restrictions for cogeneration applications. A facility's choice of fuel for cogeneration should be based on economics. Artificial barriers to the use of natural gas for cogeneration should be removed and A.G.A., therefore, supports modification of the Fuel Use Act and repeal of incremental pricing. The Fuel Use Act discourages cogeneration by banning use of oil or gas in large new facilities. Incremental pricing artificially inflates the cost of gas for industrial boilers.

- Consistent with our position on other rate design issues, A.G.A. opposes Federally mandated incentive gas rates for cogeneration. While A.G.A. recognizes incentive rates as a means to encourage cogeneration, our position remains that gas rates should be established at the State level.
- A.G.A. opposes Federally mandated high priority curtailments status for cogenerators.
- A.G.A. continues to support Federal tax credits for energy saving property and equipment tax credits that should be made available on an equivalent basis to both utilities and industry.

Rates for Purchase by Electric Utilities

The recent decision by the Court of Appeals, D.C. Circuit vacating FERC's full avoided cost rule is a potentially staggering blow to the future of cogeneration.[1] The uncertainty created by the decision, at a time when many States are still in the process of finalizing related rules, could result in a permanent loss of cogenerated power. This is true because current investment decisions made during this period of uncertainty may be to forego the additional capital costs of cogeneration equipment even in situations where cogeneration would otherwise be more economic in the long run. It is, therefore, imperative that uncertainty be removed as quickly as possible.

Typically, avoided cost is identified as two separate components, the first being the "fuel cost," the second the "capacity cost." Fuel cost refers to the cost of fuel used to produce the incremental unit of electricity and takes into consideration a plant's efficiency and fuel source. Capacity cost represents the incremental investment required to add one unit of generating capacity and normally is associated with the cost of constructing a new plant, although it may be considered as the purchase cost of power from another source such as in power-pooling arrangements.

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[1] American Electric Power Service Corp. v. F.E.R.C., No. 80-1789 slip op. (D.C. Cir., January 22, 1982), rehearing denied, (April 9, 1982).

A.G.A. believes that a legislative standard of 100% of full avoided cost, as the rate of purchase by a utility from a qualifying facility, is appropriate to encourage cogeneration and to reduce uncertainty.

This Subcommittee has heard other comments suggesting that a level less than 100% of full avoided cost is appropriate. These comments generally ignore two salient features of the full avoided cost rule as codified in S. 1885 as amended. First, States have had the authority -- under the current FERC rule and under S. 1885 -- to set the rate lower than 100% of full avoided cost when a lower rate is warranted by the public interest. Opponents of cogeneration have been very active in seeking State rules at less than full avoided cost. In addition, opponents of cogeneration have had a strong influence on the factors used by States in determining full avoided cost. In general, these actions have resulted in rates below what had been expected by some proponents of cogeneration and, in most cases, have resulted in avoided cost rates below electric utility average retail rates. Such rates, based on full avoided cost, are not likely to have a detrimental effect on the electric utility or their customers.

Purchase of cogenerated power at these rates, instead, should benefit utility customers by offsetting less efficiently generated utility power with highly efficient cogenerated power. Secondly, electric utilities and qualifying facilities can reach a negotiated rate below full avoided cost. It is apparent by the data available, that 100% of full avoided cost is only the rate at which negotiations begin. Generally, the actual negotiated rate is less. It is our opinion that actual negotiated levels will be somewhat less than whatever statutory ceiling is established. A 90% full avoided cost standard would result in actual negotiated rates lower than 90%.

A.G.A., therefore, supports the 100% full avoided cost standard as provided for in S. 1885 as amended, with the recognition that electric utility negotiators and State authorities will reduce the rate if such a reduction is consistent with the public interest and the interest of the consumers of the electric utility.

Interconnection

Of perhaps even greater impact to the potential of cogeneration is the D.C. Circuit Court's decision to strike down the FERC's mandatory interconnection rule. It is self-evident that the ability to sell cogenerated electricity to an electric utility at full avoided cost is meaningless without a physical interconnection between the qualifying facility and the electric utility. While it is unclear whether PURPA effectively waives

Federal Power Act requirements of full evidentiary hearings prior to issuance of an interconnection order, there can be no doubt that such a requirement would preclude cogeneration development whenever the electric utility involved is opposed to cogeneration. The vast majority of potential cogenerators would not go forward if required to undergo full evidentiary hearings. While the suggestion has been made that streamlined procedures may be sufficient to encourage cogeneration development, A.G.A. believes a clear statutory basis for mandatory interconnection offers the best and quickest resolution of this issue.

Collateral Issues

Some commentators have argued that the FERC should develop a fuel use test as part of its determination of qualifying status. In general, these commentators make the argument that the Federal incentives should not be available to cogeneration facilities burning certain fossil fuels. While A.G.A. is in no position to comment on whether such a test would be appropriate for oil and oil products, we categorically oppose any such test with regard to gas use.

When the Natural Energy Act statutes were passed in 1978, there was a widespread belief that natural gas was rapidly vanishing as an energy resource. Since 1978, however, the increased potential for natural gas supplies has gained broader recognition among academicians and industry planners. For example, such diverse groups as Scientists Institute for Public Information, the Edison Electric Institute, the National Economic Research

Associates, ICF and the A.G.A. Gas Supply Committee all have put forward reports that project steadily growing gas availability. Even DOE projections for gas supplies have generally improved over the last four years.

Given the exceptionally promising gas supply outlook, it is not in the public interest to limit gas-fired cogeneration. Such limitations are based on data which are out-of-date and do not recognize the tremendous surge of drilling activity since 1978.

A.G.A., therefore, recommends that no fuel use test restricting natural gas use be part of the definition of "qualifying cogeneration system." In fact, A.G.A. believes that current restrictions in the Fuel Use Act and incremental pricing should be removed.

Despite our strong desire to exempt qualifying cogeneration systems from the gas use restrictions imposed by the Fuel Use Act and incremental pricing, we believe that S. 1885 as amended should be acted upon as quickly as possible without getting involved with collateral fuel use issues.

Conclusion

A.G.A. believes that S. 1885 as amended should be acted on as quickly as possible. Although A.G.A. remains a supporter of Congressional action to repeal Fuel Use Act and incremental pricing restrictions on gas use and to extend energy tax credits to gas-fired cogeneration equipment, we believe that passage of S. 1885 as amended is of such importance that collateral issues should not be introduced in this bill.

STATEMENT OF THE IDAHO POWER COMPANY

BEFORE THE SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES
OF THE UNITED STATES SENATE
WASHINGTON, D C

June 7, 1982

The following written testimony is submitted on behalf of the Idaho Power Company and we request that it be included in the record.

Idaho Power Company is an investor-owned, electric utility which supplies electric energy to more than 257,000 general business customers in a 20,000-square-mile area of southern Idaho, eastern Oregon, and northern Nevada. Idaho Power Company is a combination hydro-thermal based utility which, in 1981, had 16 hydroelectric generating plants, a combustion turbine, and joint ownership in three coal-fired generating plants.

We appreciate the opportunity to inform you about our Company's success in implementing working relationships with numerous entities in our service area concerning the development of alternate and renewable resources. We also want to explain our reasons why we oppose S 1885.

Idaho Power Company's service area contains hundreds of potential small hydroelectric generating sites. Our wood products and food processing industries have the potential for contributing a considerable amount of power by cogeneration. Our service area also has substantial potential for the development of geothermal resources. If and when the technology for using lower temperature geothermal water to generate electricity can be developed economically, Idaho Power fully intends to encourage and participate in the development of all of this resource.

Under existing state rules promulgated pursuant to Section 210 of PURPA, Idaho Power Company has negotiated and executed long-term contracts for the purchase of capacity and energy, and has numerous contracts in various stages of completion. Based upon the experience we have gained in negotiating and executing contracts with cogenerators and small power producers, Idaho Power recommends that Congress take a long hard look at what is and will be happening to utility ratepayers in those states where full avoided costs have been required. This would allow them the opportunity to see for themselves whether or not this program is actually operating in the manner Congress previously intended. Congress should also look into the effects and the undue burden placed upon the utility ratepayers by the Federal Energy Regulatory Commission regulations imposing "simultaneous purchase and sale" obligations on utilities interconnecting with cogenerators.

When PURPA was passed by Congress, there was substantial discussion in the Conference Committee of the Senate and the House relative to the effect that payment of avoided costs to qualifying facilities would have in encouraging the development of cogeneration and small power production. The avoided cost payments were to have been paid to cogenerators who were generating energy in excess to their needs. Thus the cogenerator would supply all of his own energy requirements first, and energy excess to his needs would be sold to the local utility. Requiring a cogenerator to utilize its generation to supply its own load first is the only true way to assist in reducing the nation's excessive reliance on foreign oil and conforms to the intent of Congress in the passing of PURPA. The price of this energy sold to a utility was to be just and reasonable to both the cogenerator and the utility, thus not placing an undue burden upon the utility's customers.

Another burden upon utility ratepayers arises from the "simultaneous purchase and sale" regulations promulgated by the Federal Energy Regulatory Commission that requires a utility to pay full avoided cost to a cogenerator for the energy that the cogenerator produces, and at the same time, selling to the cogenerator the entire energy requirements of the cogenerator at the utility's retail rates, usually set on the basis of the utility's lower embedded costs. I would like to reiterate utilities do not pay these differences in costs, but the utility's customers pay the added costs of the difference between the prices paid to the cogenerator based on full avoided costs and the prices, or average system costs, paid by the cogenerator.

A recent contract signed by our Company with a potential cogenerator on our system is a good example of the inequities of this situation. Based upon one year's actual consumption by the cogenerator and based upon the full avoided costs computed by the Idaho Public Utilities Commission (which is .067 cents per kilowatt hour), the Company, rather than deriving approximately $70,000 in revenue for this energy, will have to pay the cogenerator nearly $220,000 for consuming that equal amount of energy, and the difference ($150,000) will have to be billed to other utility ratepayers or homeowners. This example, however small, is the effect of the simultaneous purchase and sale regulations adopted by the Federal Energy Regulatory Commission. I am certain that many other examples of this type throughout the United States could be found.

Amendment 1452, substituting for S 1885 by establishing a presumption that full avoided cost must be paid to qualifying facilities and allowing states to require payments in excess of full avoided cost, would unnecessarily force electric utility ratepayers to pay higher rates than would be required of them otherwise. Section 210(b) (1) requiring that rates for such purposes shall be just and reasonable to the electric consumers of the utility and in the public interest, and (b) (2) shall not discriminate against qualifying cogenerators or qualifying small power producers would be negated by this amendment.

Idaho Power's experience in developing and negotiating contracts with small power producers and cogenerators has indicated that in many cases they do not need full avoided costs in order to develop cost-effective generation projects. Permitting utilities and small power producers to negotiate the purchase price will allow the small power producer and cogenerator to earn a fair return on their investment, while at the same time giving electric consumers--they are the ones who pay the bills--an opportunity to realize some of the benefits from the transaction.

Idaho Power Company supported the Congressional intent established in Section 210 of PURPA that requires the rates to be paid to qualifying facilities balance the interest of the electric consumer, the public, and the qualifying facility. The rates to be paid to the qualifying facility owner should be negotiated at arm's length and not arbitrarily set by government or any branch thereof. However, this proposed amendment recognizes only the interest of the qualifying facilities by forcing payments of "full avoided cost" thus depriving utility ratepayers of every cent of the economic benefit resulting from cogeneration and small power production.

This amendment does not meet the just and reasonable criteria as the public interest and electric consumers' interest have been given only superficial consideration.

Unlike most of the witnesses appearing before you who advocate adoption of Amendment 1452, Idaho Power Company does not stand to gain any additional profit or benefit if it is successful in advocating its position. The people who suffer if the payment of full avoided cost is required are Idaho Power Company's customers. When full avoided costs are paid unnecessarily, the qualifying facility benefits at the expense of the ratepayers. Thus, the developer, the financier, the engineers, and many times the large corporations who testified in favor of Amendment 1452 are the beneficiaries at the expense of the electric utility ratepayers.

At the present time the people in Idaho Power Company's service area are genuinely suffering from the effects of the present economic climate. These people should not have to pay higher electric rates for the benefit of a few qualifying facilities or cogenerators if the reason for those higher electric rates is increased profits and the elimination of risk for qualifying facilities.

We submit that now is a good time for the Congress to step back and let the dust settle before it moves to fix a program that may not be broken. Give the states some time to assess how these rules, regulations, and programs for the implementation of PURPA are working.

It behooves Congress to give the utilities and qualifying facilities a chance to negotiate a price at which the qualifying facility will choose to sell its energy, or the energy excess to its needs. If, as Idaho Power Company believes, the vast majority of viable projects can be developed within that framework, the beneficiaries would be the electric consumers--your constituents.

We appreciate the opportunity to present our views. Thank you.

Logan Lanham

Logan Lanham
Vice President
Public Affairs

WRITTEN TESTIMONY
OF
PHILLIP L. VAN HUFFEL, PRESIDENT
INDUSTRIAL COENERGY SYSTEMS, INC.,
ON THE
APPROPRIATE LEVEL OF ELECTRIC UTILITY PARTICIPATION IN "QUALIFIED" COGENERATION AND SMALL POWER PRODUCTION PROJECTS
BEFORE THE
SENATE ENERGY AND NATURAL RESOURCES SUBCOMMITTEE
ON
ENERGY REGULATION
JUNE 1, 1982

The following written testimony is by Phillip L. Van Huffel, President, Industrial Coenergy Systems, Inc., on the appropriate level of participation by electric utilities in "qualified" cogeneration and small power production projects.

Industrial Coenergy Systems, Inc., is a Michigan corporation which designs and installs turnkey cogeneration projects for industrial, hospital and commercial application. Industrial Coenergy Systems, Inc., was an Intervenor in the hearings held by the Michigan Public Service Commission to implement PURPA.

Further, Industrial Coenergy Systems, Inc., has, since August of 1981 been in active dialogue with more than 30 industries in Michigan. They include Country Fresh Dairies, Bissell Co., Rapistan, AC Spark Plug, Clark Equipment Company, Dow-Corning, Stroh Brewery Company, Herrud Meat Products, Michigan Milk Producers, Fisher Body, Grand Rapids, Peet Packing, Rockford Paper Mill, Evans Products, Abitibi and Nemroc.

Feasibility studies for two hospitals, Blodgett Hospital of Grand Rapids and Hackley Hospital of Muskegon, have been proposed.

In addition, cogeneration production plants are being studied for two communities, the City of East Jordon and Roscommon County.

A cogeneration plant is being engineered for a planned community in New Mexico across the river from the City of El Paso, Texas.

Based upon experience in the field with potential cogenerators, upon considerable contact and communication with representatives of electric utility companies in Michigan and in Texas and as a participant in the hearings before the Michigan Public Service Commission to implement PURPA, it is my conviction that the limitation upon ownership in cogeneration facilities by electric utilities to not more than 50% is sound and should be continued. Further, that it would be a mistake to leave the decision to increase the ownership to each individual state.

ELECTRIC UTILITIES HAVE AN UNDUE DEGREE OF INFLUENCE WITH POTENTIAL COGENERATORS

The leverage of the electric utility with its customers is unduly great and changing the present law to permit electric utilities to own more than 50% would perpetuate and increase this situation. The economic power and leverage with potential cogenerators would put electric utilities into an unfair competitive situation with companies like Industrial Coenergy Systems, Inc.

If the power companies are allowed to own more than 50% of a qualified facility in an unregulated subsidiary they would exercise unfair competition against private companies like Industrial Coenergy Systems. Their monopoly position as retailers of electricity give them a unique opportunity to discourage industrial and commercial development until all competition has fallen by the wayside.

This undue degree of influence with potential cogenerators hinders and delays development of cogeneration. There have been, in our experience, several examples of this.

For instance, at a General Motors plant, which was surveyed by Industrial Coenergy Systems, the electric utility representatives told the operating personnel that there would be severe economic damage to the electric utility if the manufacturing company put in cogeneration.

In a second instance, the power company representative told a milk process plant it was not feasible to put in cogeneration because the cost was too high. In this case, a survey our company conducted showed cogeneration would pay back its investment in two years or less. However, the impact of the negative comments by utility company representatives, citing the wrong technology, has discouraged the executives of the co-op from proceeding with the project.

In a third instance, during hearings on the implementation of PURPA regulations in Michigan before the Hearing Judge of the Michigan Public Service Commission, a representative of one of the most influential electric companies in the United States said his company was going to do nothing on cogeneration until it could have a controlling ownership through an unregulated subsidiary. When that happened, they would convert their older plants into cogeneration plants and execute new contracts with themselves.

THE PRESENT LAW ENCOURAGES COMPETITION AND FASTER DEVELOPMENT OF COGENERATION

The present law restricting ownership by electric utilities to not more than 50% encourages competition. Companies like Industrial Coenergy Systems, Inc., are dealing with industries, hospitals and commercial enterprises daily, trying to sell them on the idea of the installation of a qualified cogeneration system as soon as possible. Electric utilities are discouraging cogeneration installations because they represent a loss of customers for electric power.

Power companies have no incentive for pursuing cogeneration. They always had the opportunity but did not pursue it aggressively. Cogeneration facilities tend to be smaller sized than modern base load power plants. Power plant engineers trained to design and build 500 to 1000 MW facilities have little interest in 5 to 10 MW plants. Mechanical cycle plants of this size are uncomplicated to design. They require less numbers of engineers who do not have to be familiar with complicated steam cycles. These small plants reduce the need for engineers and therefore represent a threat to the technical staff of the power companies.

Cogeneration, especially, depends upon matching heat loads of a user's plant to generating capacity. Electric companies have little knowledge of a user's technology. They only know their own technology. This lack of user knowledge prevents the power companies from understanding how to identify potential cogenerators. If power companies are allowed to control the development of their potential they will do so at an inefficient pace due to this lack of understanding.

Cogeneration has a large market potential. Power companies, by their own testimony have exhibited their lack of understanding of this potential. If they are allowed to own more than 50% of qualified facilities they will have to acquire new marketing staffs to develop the markets for these facilities. These people will end up in the overhead of the parent company at an increased cost to the rate payers.

Power companies are having difficulty raising new capital. Private companies can raise capital easier for cogeneration facilities because cogeneration is so much more efficient than the regular power plant the return on investment is much better. It is necessary to restrict power company ownership to 50% so that private funds can be attracted to help develop cogeneration.

If power companies want to pursue cogeneration they can do so now without any change in legislation. In fact many of them do so. Detroit Edison, Consumers Power, and City of Lansing Board of Power and Light have been involved in the ownership of cogeneration facilities for years. Each one operates a central steam loop in a major Michigan city. Each steam facility has or has in the past generated electricity and steam. Nothing prevents the power companies from building cogenerating plants and passing the savings on to the rate payers. Further legislation is unnecessary.

ELECTRIC UTILITIES WANT TO MAINTAIN A MONOPOLY FOR SUPPLYING ELECTRIC POWER

It comes clear that electric utilities want to maintain their monopoly hold on the generating of electricity. They have much to gain. In an effort to accomplish this they have used arguments which are unsupported by facts but are believed by people unfamiliar with electric company operations.

The first argument states that there is already too much capacity. Cogeneration will only create a glut. The fact is that capacity shortages are imminent in this decade. Fossil fuel power plants are exceeding in their useful life. Nuclear plants which were planned to replace them have not been built. The first nuclear plants built are now reaching their final shutdowns and nothing is in place to pick up this loss of load. Cogeneration is the most promising vehicle for relief from this problem.

Significant capacity can be sited and built in less than two years.

The second argument presented said that surveys conducted by power companies among their principle users showed little potential. The fallacy of this argument rests on the validity of the survey. Because power companies generate electricity mainly with steam they only surveyed steam generating potential. In direct testimony, a power company official from Michigan stated there was only 50 MW of potential in its entire system which could be developed between now and 1990. Industrial Coenergy Systems has identified nearly 450 companies in Michigan which could potentially install over 1000 MW of cogenerating capacity. In fact, one customer in the power company service area previously cited has a cogeneration potential for over 50 MW. The difference between Industrial Coenergy Systems' assessment and that of the power company's is the technology employed. We have shown that mechanical cycle generation and waste heat recovery are very economical and practical.

One other argument is that cogeneration will erode the customer base of the power company. If the power company loses revenue then it will have to raise rates to its remaining customers to make up for the short fall. This argument is false for two reasons. If the power company loses revenue base then it should reduce its operating costs accordingly. Electric rates should remain the same. Second, under the provisions of the PURPA regulations, the power company can enter into a simultaneous buy/sell agreement with the cogenerator. Under this type of contract the power company does not lose revenue. Instead it replaces its old, worn out and inefficient capacity with that of the cogenerator from whom it buys electricity the same as it would from any other electricity producing facility such as another power company. At the same time, it continues to sell to the cogenerator, through a separate transaction, all the power that is used by the cogenerator. The revenue base is maintained at the same time that more efficient, newer, less costly generating capacity is being put on line.

If a power company were to own a controlling interest in a qualified facility they would be in a position of negotiating a contract for the purchase of electricity from themselves. This is collusive and unfair to rate payers as well as cogeneration users and developers of industrial cogeneration facilities.

Electric utilities have enjoyed a monopoly for many years. Before the control of well head prices for gas and oil in the early 50's, cogeneration accounted for more than 30% of the electricity generated in the United States. In 1980 that figure had dropped to under 5%. Without competition, the power companies have built us into an energy canyon which is closed at one end. We have much of our generating capacity dedicated to plants which are greater than 500 MW. Much of our capacity has been satisfied by nuclear plants which are proving to be much shorter lived than planned and are much less reliable than our systems can afford for safe reserves. The free market system now provides the nation with a means to break out of the box in which we are now trapped. Through an aggressive, competitive market development, over 42,000 MW of electrical capacity can be built. Furthermore, this capacity will be at least two times more energy efficient than any of the base load power plants now in operation. If a monopoly is allowed to develop, this goal will never be realized. Industrial Coenergy Systems recommends that the 50% rule be held to steadfastly.

CONCLUSION

Industrial Coenergy Systems is opposed to leaving the decision of percentage ownership to individual states. It has already been demonstrated that states vary greatly in their policies. Some states have strong public service commissions which retulate carefully.

Rate payers would be damaged by the greater than 50% ownership scheme. Power companies would divert capital or borrowing capacity provided by the rate payers through demand charges into unregulated subsidiaries who would invest in cogenerating facilities. The proceeds from these subsidiaries would benefit the stockholders at the expense of the rate payers.

Cogeneration is not a state issue, it is a national issue.

The entire nation needs to employ the most energy efficient technologies available. The Energy Act of 1978 and PURPA encourage that development on a national scale and the proposal to allow states to determine the degree of ownership in cogeneration facilities by electric utilities would dilute that national effort.

Natural Resources Defense Council, Inc.
25 KEARNY STREET
SAN FRANCISCO, CALIFORNIA 94108
415 421-6561

Washington Office
1725 I STREET, N.W.
SUITE 600
WASHINGTON, D.C. 20006
202 223-8210

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10168
212 949-0049

STATEMENT
OF THE NATURAL RESOURCES DEFENSE COUNCIL ON PENDING BILLS TO AMEND THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978

SUBMITTED TO THE SUBCOMMITTEE ON ENERGY REGULATION
U.S. SENATE

June 15, 1982

PREPARED BY
GREGORY A. THOMAS
Senior Attorney

The Natural Resources Defense Council (NRDC) welcomes this opportunity to present its views on S. 1885 which would amend the Public Utility Regulatory Policies Act of 1978 (PURPA). We are strongly of the view that amendments to PURPA are urgently needed to resuscitate the incentives for cogeneration and small power production which were invalidated by the U.S. Court of Appeals for the District of Columbia in American Electric Power v. Federal Energy Regulatory Commission, and to ameliorate the FERC's erroneous extension of the incentives to all new hydro-electric projects. The momentum which PURPA has lent the small power industry cannot withstand a protracted period of legal uncertainty incident to Supreme Court review and further rulemaking before the FERC. America's remnant free-flowing rivers cannot withstand the onslaught of small-scale hydro projects which have been stimulated by indiscriminate application of the PURPA incentives. We have specific suggestions on both facets.

NRDC is a national nonprofit organization dedicated to the enhancement of the environment and the prudent use of natural resources. We are supported wholly by contributions from foundations and some 40,000 members. Since its founding some 12 years ago, the NRDC has been a leader of the national movement to develop to their full potential renewable, environmentally benign sources of energy.

Today, as in 1978 when the vital federal incentives for renewable energy were enacted, NRDC vigorously supports the principles of avoided cost rates, mandatory interconnection, and removal of institutional barriers to the marketing of electricity from renewable sources. Indeed, the potential energy contribution from cogeneration, wind, solar electric generators, biomass and hydropower at existing dams is the cornerstone of NRDC's ten-year long effort to reform power planning and use in the Pacific Northwest and in California. NRDC has prepared technically rigorous assessments to demonstrate the extent to which the maximum reliance on cost-effective renewable energy sources and on energy conservation can displace conventional, central-station generation. NRDC's "alternative scenarios" have now been largely integrated into the official power plans in both of these jurisdictions, and the results are nothing less than dramatic. In California, the strategy has succeeded so well that the utilities have cancelled or deferred all construction plans for central station generators until after the year 1990. In the Pacific Northwest, dire predictions of power shortages just three years ago have given way to plans to export an anticipated surplus of electricity.

NRDC's commitment to small power production and the PURPA incentives is thus both longstanding and firmly held. We are concerned, however, that, in reestablishing these incentives, amendments to PURPA clearly distinguish between hydropower projects which are environmentally benign and hydro projects which, in effect, tap a non-renewable natural resource:

free-flowing rivers possessing outstanding wild, scenic and recreational characteristics.

FULL AVOIDED COST RATES

Section 3 of S. 1885 [Section 2(a) of H.R. 6500] would reestablish as the standard for prescribing purchase rates from qualifying facilities the incremental cost of alternative energy (called the "full avoided cost" in FERC's implementation rules). A state regulatory authority at the behest of a regulated utility, or an unregulated utility, could prescribe a different (probably lower) rate if it determines that such rate would be sufficient to encourage cogeneration and small power production and would otherwise be consistent with the public interest. With a caveat, NRDC supports this approach.

Incentive rates for renewable energy are justified and necessary to direct the nation's limited capital resources toward these preferred energy technologies. Certainly some investments in renewable energy systems and cogeneration would be attractive at purchase rates less than full incremental cost. But an optimum level of investment, defined as the amount that will produce maximum utilization of renewable energy resources without increasing rates to customers beyond what they would otherwise be, will not occur at some lesser rate.

It is incorrect to argue, as do some utilities, that purchase rates based on full avoided costs benefit only the small power producer, not the ratepayers. Ratepayers derive substantial benefits in two ways. First, small power facilities tend to supplant the most expensive contribution to a utility's generating mix, thereby lowering over time the incremental cost of generating electricity below what would have otherwise occurred. As this "avoided cost" declines, the purchase rate for the small power should also be reduced. Secondly, ratepayers, as members of the general public, derive the very important benefits of renewable energy which motivated the enactment of PURPA in the first place: more efficient use of depletable natural resources, enhancement of the environment, diminished reliance on foreign sources of energy, shorter lead times to add new generation capacity and increased reliability of electrical service from small-scale, dispersed generators. These are important benefits for which the American public has, time and again, demonstrated a willingness to pay.

The concept of allowing state regulators and unregulated utilities to deviate from the incremental cost standard only upon making certain findings is sound in concept. It allows state implementation regulations which have already been adopted to remain intact. At the same time, it gives the states the flexibility which they may need to tailor their program to local circumstances. However, we urge the subcommittee to circumscribe narrowly the grounds on which deviations from incremental costs would be allowed. A broad "public interest" standard invites utilities who are hostile to the concept of incentive rates for small power producers to assail existing rate regulations and casts a cloud of uncertainty over the fragile financing plans of small power producers.

The circumstances in which a lesser rate would make sense are few in number and have been brought to the attention of the Subcommittee. These include avoiding adverse air quality impacts from diesel cogeneration, avoiding the costs to consumers of an inordinate level of excess capacity, compensating for inequitable tax rates imposed on utility property as compared to cogeneration and small power property and, as discussed at length in this testimony, elimination of the stimulus to construct new hydroelectric projects on streams which are highly valued for their natural qualities. We urge the Subcommittee to tighten the provisions of Section 3 in this respect.

MANDATORY INTERCONNECTION

Even more fundamental to the success of small power facilities than incentive rates is the guaranteed market which is established through PURPA's mandatory interconnection provisions. S. 1885 authorizes the FERC to develop interconnection rules for cogenerators and small power producers without observing the Federal Power Act's procedural requirements and substantive criteria for interconnection orders.

These provisions of Section 210 and 212 of the Federal Power Act were developed for use in the context where one utility seeks to connect with another to buy or sell bulk power. The provisions make no sense in the context of purchase and sales to small power producers. The FERC and the state commissions can readily develop rules to protect the safety and reliability of a utility system. NRDC fully supports the approach in the proposed amendments.

PROTECTING RIVER RESOURCES

When Congress enacted Section 210 of PURPA in 1978, it had in mind a very specific and precise purpose. This section was designed to remove the institutional barriers to the production and marketing of certain types of power only, namely power produced from waste heat in the form of cogeneration and power produced from renewable sources of energy. Congress sought to encourage these types of electrical energy primarily because, by their nature, they can provide important social benefits without depleting or degrading the nation's natural resource base. PURPA's other goals -- to reduce reliance on foreign oil and to foster equity among ratepayers -- are not particularly pertinent to Section 210.

NRDC supports restoration of the PURPA incentives to the full range of small power technologies and power sources which are consistent with this original construction. However, we urge this subcommittee to seize this opportunity to correct an erroneous and illegal expansion of the category of qualifying facilities by FERC in its implementing regulations. When Congress enacted PURPA in 1978, it was not oblivious to the severe consequences which a rash of small hydroelectric projects would have on free flowing rivers. For that reason, it did not expressly authorize PURPA incentives for hydropower, but instead stipulated that qualifying small power producers must utilize "renewable" sources of energy. In case it were not obvious that the inundation or dewatering of a free-flowing river degrades a finite natural resource of important ecological, aesthetic and recreational value, it further provided in the Conference Report that water was to be included in the term "renewable resources" with respect to hydroelectric facilities at existing dams, obviously intending by that reference to exclude new hydroelectric projects. (S. Rpt. 95-1292 p. 361).

Initially, in its proposed implementation regulations, the FERC honored this distinction between old and new facilities and provided that "a hydroelectric facility cannot become a qualifying small power facility unless the impoundment portion of the facility is complete as of the date of the filing for qualification" (44 Fed. Reg. 38872, 38873, July 3, 1979). However, when FERC issued its final rules implementing

Section 201 of PURPA, it made a 180 degree reversal of its position and decided that hydro projects at both existing and new dams fell within the definition of "renewable resources."

FERC's commentary to the final rules (45 Fed. Reg. 17959, 17966, March 20, 1980), indicates that this change was made to accommodate certain commentators (presumably hydro developers), is based on an improbable interpretation of the term "renewable resources," and totally disregards the expression of Congressional intent in the Conference Report. Moreover, this fundamental change, with obvious adverse significance for the environment, was made without any treatment of the issue in the environmental impact statement which the agency prepared in connection with the proposed rules. Remarkably, and indefensibly, the agency found in its environmental assessment that PURPA incentives would have a negligible effect on private sector decisions to build new hydroelectric facilities and the agency therefore made a finding that PURPA incentives, applied to new hydroelectric projects, would have no significant impact on the environment.

Subsequent events have proven this judgment to be wrong. FERC's interpretation of PURPA has given rise to a rash of applications for small hydro facilities that would involve new dams or diversions. In California, for example, some 400 applications for new projects have been filed since the PURPA incentives became effective as compared with 172 applications for retrofit hydropower projects. As the recent case of American Electric Power Service v. FERC illustrates, FERC's administrative interpretations of the provisions of PURPA are not immune from successful challenges, and it is highly probable that the final FERC rule extending PURPA benefits to new hydro projects could not withstand one.

In the interest of maximizing small power production, NRDC favors expanding the category of hydrogeneration facilities which should qualify for PURPA benefits beyond simply the retrofits at existing dams. But in extending PURPA benefits to new hydroelectric projects, two limitations are necessary, both extremely modest in their proportions but indispensable to avoid major adverse impacts on the nation's rivers. We ask the sub-committee to adopt provisions which will guarantee minimum stream flows in order to protect fishery resources and to draw the line short of compromising the nation's remaining de facto wild and scenic rivers. Each of these points is elaborated below.

PROTECTING MINIMUM STREAM-FLOWS

Historically, Anerica's river resources have been much abused. Human settlements tend to concentrate on watercourses where they are heavily exploited for fishing, trapping, transportation, waste disposal, irrigation, power and eventually, for recreation. As a result of this intensive historical use, only 2% of the total mileage of streams and rivers in the contiguous 48 United States remains relatively pristine. (Approximately 61,700 miles, involving about 1,500 river segments out of 3,250,000 river and stream miles in the 48 contiguous United States.)

The other 98% have been appreciably degraded and their resources diminished. In California, for instance, the anadromous fish population has been reduced to 50% of its historic levels due to the impacts of man-made development on the rivers. For the 98% of the nation's rivers which have already lost their natural qualities, PURPA-eligible new hydroelectric projects must not be constructed or operated in such a way as to impair the minimum stream flows which fish and game officials believe to be necessary to maintain and enhance the productivity of fish and wildlife resources. Additionally, they must not impair the navigability of the watercourse so as to interfere with recreational uses of the river. These findings and decisions should be made only after considering the cumulative impacts of all water projects on the same watershed and the annual and seasonal variations in stream flows which can be anticipated. The criteria should apply in the case of repairs to breached dams as well as construction of new dams and diversions.

SAFEGUARDING WILD RIVERS

For the remaining 2% of the nation's rivers, such mitigation requirements will not suffice. These are America's de facto wild and scenic rivers which the National Park Service of the Department of the Interior has determined in its Nationwide Rivers Inventory (January 1982)[1] probably possesses "sufficient natural or cultural attributes to qualify" for addition to the national wild and scenic river system. For these 2%, any hydro development, however well-designed, would be incompatible with the outstanding wilderness and scenic qualities and may disqualify these river segments for eventual preservation. By breaching the integrity of the wilderness quality, one or sefveral small-scale hydro facilities on such a segment effectively and irrevocably commits it to more intensive development before an official decision on preservation can be made. The future of the river is sealed inadvertently.

Whereas this nation's terrestrial process for identifying a wilderness system is relatively mature, the riparian wilderness system is in its infancy. The Wild and Scenic Rivers Act was passed in 1968. During the ensuing 14 years, only 35 river segments have been designated in the contiguous 48 states comprising less than 5000 river miles.[2] An

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[1] Except for the state of Montana and Alaska, all rivers and river segments in United States of 25 miles or longer were inventoried and evaluated. This inventory comprises the best data bank so far assembled on the natural values of America's remaining free-flowing rivers.

[2] Another 26 segments were designated in the Alaska Lands National Interest Conservation Act.

additional 46 segments are still under study.[3] This compares with some 1,500 segments comprising 61,700 river miles which have been identified by the National Park Service as probably possessing sufficient natural or cultural attributes to qualify for the national system.

Free-flowing rivers are a finite and non-renewable resource the competing demands on which can only be expected to grow over time. The existing legal framework is ill-designed to resolve these conflicts. Different instrumentalities of government make irreconcilable decisions about development or preservation, at different times on the basis of different standards. Whereas the FERC licenses the development of rivers, the Departments Interior and Agriculture and ultimately the U.S. Congress sets rivers aside for preservation. Development decisions are made on the basis of engineering and economic factors; preservation decisions on environmental and recreational factors. Studies and decisions regarding development usually occur much earlier than studies or decisions on whether a river segment should be preserved. Thus, development decisions by the private sector often effectively preempt the subsequent preservation of a river. That is why only 2% of the rivers in this country remain eligible for preservation.

3/ To date many states have no river segments either designated or under study, including New Hampshire, Louisiana, Massachusetts, Kansas and Illinois.

In enacting the National Wild and Scenic Rivers Act in 1968, Congress declared "that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition...". This policy would be contravened if the PURPA incentives are applied to all projects on all rivers indiscriminately. Rivers which are highly valued for their natural characteristics could be easily rendered ineligible for protection under the Wild and Scenic Rivers Act if they are beset with a rash of small-scale hydro dams or diversions stimulated by the federal incentives in PURPA. It is easy to imagine the remaining 2% of the wilderness rivers in this country vanishing almost overnight in a flurry of diversion works, penstocks, powerhouses, transmission lines, access roads and appurtenant structures.4/

4/ The National Park Service's current "Guidelines for Eligibility, Classification and Management of River Areas" provide criteria for designation and classification of river segments. In order for a river segment to be eligible to be preserved as a "wild river" it must be "free of impoundments, generally inaccessible except by trail, essentially free of structures including such things as buildings, pipelines, powerlines, dams, pumps, generators, diversion works, rip-rap and other modifications of the waterway or adjacent land within the river corridor."

In order to be preserved as a "scenic river" a segment must be free of impoundments, its shorelines and immediate environs should not show substantial evidence of human activity, other than limited agriculture.

This is not a mere hypothetical. A wave of "hydromania" has seized the nation since the rules implementing PURPA were promulgated. In the year before the PURPA rules were promulgated, 76 applications were submitted to the FERC for new hydroprojects in the United States. Last year, after promulgation of the rules, 1,800 applications were received. At the present time, new applications are being received at the FERC at the rate of about ten a day. Looking at California as a national barometer, projects which are pending at this time would adversely effect over 2,000 miles of streams in the state.

We are in the process of ascertaining how many of these new projects would be on rivers suitable for designation under the national wild and scenic river system. In California alone, the Department of Water Resources reports that, as of May 1, 1982, applications have been filed for 24 new projects which would be located on *de facto* wild and scenic rivers (inventory rivers) and adversely affect (by impoundment or stream-flow depletion) some 550 river kilometers. Applications

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(4/ continued) In order to be preserved as a "recreational river" the criteria are less exacting. However, extensive development would clearly disqualify a segment. The criteria allow for some existing impoundments, diversions, and other modifications of the waterway having an impact on the river area, "provided the waterway remains generally natural and riverian in appearance."

Limitations on future development in management plans will vary widely depending upon a river's classification. Thus, a recreational designation provides only very minimal protection, whereas wild segments are managed essentially as wilderness.

have also been filed for 38 new projects which would be located in areas under consideration by the Forest Service (RARE II areas) for wilderness designation, adversely affecting some 325 additional river kilometers. Thus, it is clear that the threat to *de facto* wild rivers is real and imminent.

In view of this large and growing problem, we recommend that the Subcommittee adopt provisions which would make new hydropower projects eligible for PURPA incentives only if they incorporate mitigation measures adequate to protect minimum stream flows, *and* if they would not adversely effect stream segments which either are in the national river inventory or are within areas under review for wilderness designation under the Forest Service RARE II process. Projects in such areas should not be eligible for PURPA benefits until a decision is made, in the screening process prescribed in the Wild and Scenic Rivers Act or in the Forest Service's wilderness review process, that the segment or area should not be added to the national wild and scenic river system or the national wilderness system. Discretion to qualify or disqualify projects on that basis could be vested either in the Federal Energy Regulatory Commission or in the state regulatory commissions. Such provisions would create a legal presumption that a *de facto* wild river is unavailable for PURPA-stimulated hydro projects until an official decision to the contrary is made. Language to accomplish these purposes has already been separately submitted to the staff of the subcommittee.

It should be noted that NRDC's proposal would:

(1) significantly expand the category of hydro facilities that would be eligible for PURPA benefits beyond what Congress intended in the 1978 enactment (and beyond what the current law, properly interpreted, would allow);

(2) give the small power industry the certainty regarding the types of projects which will qualify that they need to develop small power with a minimum of delay and cost;

(3) provide a mechanism whereby America's small and shrinking stock of free-flowing rivers will not be compromised until a formal decision is made as to whether or not they should be ultimately preserved in their wild condition.

This proposal is consonant with the policy of the Wild and Scenic River Act to balance river development with river preservation. It also honors the distinction in PURPA between power derived from renewable resources and power production which makes an irretrievable committment of finite and valuable resources, such as fishery habitat or de facto wild and scenic river segments.

The amount of potential hydroelectric energy which would be foregone under this proposal cannot be ascertained with certainty at the present time, but it would not be large. As noted, we propose that only 2% of the nation's river segments be placed beyond bounds. Small hydro generators typically are of a scale of 1 to 10 megawatts. Even if several hundred potential generating stations were excluded by the proposed criteria, the contribution to the nation's energy supply might aggregate no more than the output of one modern central station generating plant nationwide. Retrofits at existing sites would remain eligible for PURPA incentives. In California, for instance, there are 1,600 existing dams with a potential to provide 600 megawatts of power. 450 of these have already been applied for. Additional dams and diversion works on 98% of the nation's rivers would also be eligible for PURPA benefits provided that minimum stream flows were maintained.

The balance which we propose is wise not only from the standpoint of protecting important environmental values, but also from the standpoint of optimizing small power production. Hydro developers, both municipal and private, have only a limited fund of capital to devote to the exploitation of the nation's hydropower resources. It is far better for all concerned that this capital be focused on projects where conflicts over competing uses of the resources are minimal. Protracted contests before the FERC, state regulatory bodies and the U.S. Congress can only exhaust the time and resources of all concerned. Yet, if PURPA is amended so as to make all of the nation's rivers indiscriminately available for new projects, just such an open ended battleground can be expected.

NRDC appreciates this opportunity to present its views.

May 27, 1982

STATEMENT OF
THE COUNCIL OF INDUSTRIAL BOILERS OWNERS CONCERNING AMENDMENT NO. 1452 IN THE NATURE OF A SUBSTITUTE TO S.1885

BEFORE THE SUBCOMMITTEE ON ENERGY REGULATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

The Council of Industrial Boiler Owners (CIBO) is a broad-based association of industrial (non-utility) boiler operators and related equipment manufacturers. CIBO was formed in 1978 to encourage the maximum exchange of relevant information among its members and between industry and government to assure that public policy in the fuel utilization and environmental areas is realistic and supportive of individual and national economic integrity. Its members' interests cover sixteen major industry groups, including chemicals, food, primary metals, textiles, lumber, paper, petroleum and machinery.

On April 19, 1982, we presented testimony before this Subcommittee on S.1885, as originally introduced. CIBO is submitting this written statement in response to the major changes to S.1885 contemplated by Amendment No. 1452 ("Amendment") proposed by Senator Humphrey and printed in the Congressional Record on May 18, 1982. A hearing was held by this Subcommittee on this proposal on May 24, 1982.

This Amendment, like S.1885, would repeal the ownership limitation in the current definition of "qualifying cogeneration facility" in Section 3(18)(B) of the Federal Power Act. It would, however, permit states to prohibit electric utilities from owning a qualifying cogeneration facility. Under this Amendment, an electric utility would be free to own and operate "qualifying cogeneration facilities," be exempt from most federal and state utility regulation, and receive the rate and other benefits of PURPA unless barred from doing so by the state. The Amendment would also repeal the current rate-setting and non-discriminatory pricing provisions found in Section 210 (b) of PURPA. In its stead, Congress would establish full avoided costs as the Federal standard for payments to cogenerators, but allow states to alter this rate prospectively. Finally, FERC would be authorized to order interconnections between utilities and qualifying facilities without need to employ the elaborate procedures of Sections 210 and 212 of the Federal Power Act, if certain specified conditions are met.

CIBO, as an organization composed of both industrial ratepayers and cogenerators, is deeply concerned that Federal action which encourages electric utilities to develop exempt cogeneration projects may be detrimental to both the interests of ratepayers and non-utility cogenerators. Removal of the Federal ownership limitation, combined with exemption from most Federal and state utility regulation, may prompt individual utilities to divert scarce capital from their regulated business, to exempt cogeneration projects. This may have the unintended result of reducing both the utility's incentive and its financial ability to invest in new regulated projects. Obviously, utilities will invest in qualifying facilities only if the price they can obtain for the output of the unit exceeds the price obtainable from a regulated unit. Expenditures for cogeneration projects will also inevitably reduce the amount of capital available for other projects, such as base load alternative fuel-fired units designed to reduce the utility's dependence on insecure and expensive oil and gas. Indeed, utilities with substantial ownership interest in cogeneration units may acquire a vested interest in retaining expensive oil and gas-fired equipment in order to assure that the avoided costs, and, therefore, the profits of the unregulated subsidiary, remain high. By encouraging utilities to enter into these projects, legislation removing the ownership limitation, therefore, may inadvertently increase the cost and reduce the adequacy of service to ratepayers. This action would also fundamentally alter the relationship between the utility and ratepayers by depriving the ratepayers of any direct benefits from investments made by the utility in these unregulated generating facilities.

The possible adverse consequences from this action for cogenerators are equally sobering. A blanket extension of PURPA benefits to electric utility cogeneration could renew utility discrimination against non-utility cogenerators which was the reason Congress felt it necessary to enact the PURPA incentives for non-utilities. Utilities will have an obvious incentive to agree to long-term purchase agreements and favorable payment terms with their affiliates so as to assist them in obtaining financing, while resisting such provisions as to other cogenerators. As a result, non-utility cogenerators may have a more difficult time in obtaining contractual commitments that justify investment in cogeneration facilities.

By letter of May 7, 1982, to this Subcommittee, CIBO, in response to a request from the Minority Staff, stated that it could accept legislation which would allow states to extend the benefits of PURPA on a case-by-case basis to cogeneration facilities primarily owned by utilities if coupled with legislative action to overcome the barriers to cogeneration posed by the decision in American Electric Power Services Corp. v. FERC. This proposal would permit utilities to own more than a 50% interest in a qualifying facility only if such ownership was specifically approved by the pertinent state regulatory authority, after consideration of the impact of a specific project on ratepayers and other affected persons. The proposed Amendment is the reverse of this proposal.

Because of our overriding concern about the adverse impact of utility diversification into exempt activities, CIBO must oppose Amendment 1452 in its present form, since it deprives ratepayers of a critical protection -- prior state commission review of utility investment in cogeneration projects to assure that such action does not prejudice ratepayers or non-utility cogeneration. Immediate extension of qualifying facility status to utility-owned units, unless a state intervenes, will create a powerful incentive to utilities to speedily establish unregulated cogeneration subsidiaries. By shifting the burden of justifying entry into unregulated activities from the utility to the state, the Amendment creates the potential, and indeed, the likelihood, that utilities will diversify into unregulated ventures without prior consideration of the impact of the diversification on ratepayers.

CIBO fully supports efforts to overcome the disincentives to cogeneration created by the AEP decision and commends Senator Humphrey and other members of the Subcommittee for their efforts to address this serious issue. It believes, however, that the fundamental restructuring of state responsibilities under PURPA which is contemplated by this Amendment must be carefully reviewed before it is adopted. The prospect that states may alter Federally established rates for purchases from cogenerators in the future, apparently with no required findings by the state, may reinforce, rather than temper, the aura of regulatory uncertainty which now prevails because of the AEP case.

Indeed, the Amendment might even allow states to substitute a "cost-based" rate for sales by cogenerators for rates based on avoided cost. Imposition of cost-based regulation could expose cogenerators to excessive regulation. It could also endanger the cogenerators' ability to obtain energy tax credits for the cogeneration unit. The energy tax credit for cogeneration is not available for property deemed to be "public utility property." Under Section 48(e)(17) of the Internal Revenue Code and Section 1.46-3(g)(2)(iii) of the IRS regulations, property subject to cost-based rates, even if owned by an industrial user, might be deemed to be "public utility property" and denied the energy tax credit. Although CIBO takes no position on whether Congress should extend the current energy tax credits for cogeneration, we believe that Congress should, as part of its careful review of the impact of the proposed Amendment, consider the impact of this Amendment on the ability of cogenerators to avail themselves of the *current* energy tax credit.

In summary, because of its serious concerns about the implications of utility diversification into exempted activities on ratepayers and non-utility cogeneration, particularly if there is no *prior*, individualized review by the states, CIBO must, reluctantly, oppose the Amendment in its present form. However, we wish to express our appreciation for the efforts by the Chairman, other Committee members, and the Subcommittee Staff for addressing the many complex issues confronting ratepayers, cogenerators and utilities in this area. We hope that these efforts will continue and will ultimately lead to a proposal which overcomes unnecessary barriers to cogeneration while fully protecting ratepayers.

Sincerely,

William B. Marx